THE ROLE OF ORGANIZATIONAL EXCELLENCE AND ENVIRONMENTAL REGULATION AND POLICY ON THE RELATIONSHIP BETWEEN TQM AND SUSTAINABLE PERFORMANCE IN MALAYSIAN FOOD AND BEVERAGE COMPANIES

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ABSTRACT

There have been inconsistent findings in the literature concerning the relationships between quality management and sustainable performance. Hence, this research has prompted a further investigation of the effect of other variables that may better explain the nature of these links. The main purpose of this study is to investigate the mediating and moderating effects of organizational excellence and environmental regulation and policy (ERP), respectively, on the relationship between total quality management (TQM) and sustainable performance (SP). Human resources management (HRM), service design (SD), information and analysis (IA), continuous process improvement (CP), benchmarking (BM), management leadership (ML), and quality assurance (QA) as TQM elements considered in this study were mediated and moderated with their respective relationships with sustainable performance. Questionnaires were distributed to 303 Malaysian food and beverage companies. 98 questionnaires were returned and used in the analysis using the PLS-SEM. The results of this study revealed that effective BM, CPI, SD, QA, and IA as TQM elements have a positive and significant effect on sustainable performance on one hand and organizational excellence as a significant mediator of ML, CPI, SD, HRM, and IA to sustainable performance on another hand. In contrast, the results indicated an insignificant moderating effect of environmental regulation and policy on the relationships between TQM practices and sustainable performance. This study supported the premises of the contingency and the institutional theory by reaffirming the importance of excellence for any successful strategic implementation in enhancing sustainable performance through the implementation of quality practices. The developed framework of this study can be employed by policy and decision-makers. Managers in the industry should consider the importance of this model when implementing any practice in the future. For future research, it is recommended that a longitudinal study is carried out to evaluate the impact of TQM, organizational excellence, and ERP on SP.

Keywords: environmental regulation and policy; organizational excellence; total quality management; sustainable performance

ABSTRAK

Literatur mengenai hubungan di antara pengurusan kualiti dengan prestasi mapan didapati tidak memberikan hasil yang konsisten. Oleh demikian, kajian ini mendorong penyelidikan lanjut tentang kesan pemboleh ubah lain yang mungkin dapat menerangkan perkaitan tersebut dengan lebih baik. Tujuan utama kajian ini adalah untuk menyelidik kesan pengantara dan penyederhanaan kejayaan organisasi serta polisi dan peraturan persekitaran (ERP) ke atas hubungan di antara pengurusan kualiti menyeluruh (TQM) dan prestasi mapan (SP). Pengurusan sumber manusia (HRM), reka bentuk perkhidmatan (SD), maklumat dan analisis (IA), penambaikan proses berterusan (CP), penandaarasan (BM), kepimpinan pengurusan (ML) dan jaminan kualiti (QA) sebagai elemen TQM dianggap telah mengantara dan menyederhanakan hubungan masing-masing dengan prestasi mapan. Borang soal selidik diedarkan ke 303 buah syarikat makanan dan minuman di Malaysia. 98 soal selidik dikembalikan dan dianalisis menggunakan PLS-SEM. Hasil kajian ini menunjukkan bahawa BM, CPI, SD, QA dan IA yang berkesan sebagai elemen TQM mempunyai kesan yang positif dan signifikan ke atas prestasi mapan pada satu sudut dan kejayaan organisasi sebagai pengantara yang signifikan kepada ML, CPI, SD, HRM dan IA kepada prestasi mapan pada sudut yang lain. Sebaliknya, hasil kajian menunjukkan kesan penyederhanaan yang tidak signifikan bagi polisi dan peraturan persekitaran ke atas hubungan di antara amalan TQM dengan prestasi mapan. Kajian ini menyokong asas teori kontigensi dan institusi dengan mengesahkan kepentingan kecemerlangan untuk sebarang pelaksanaan strategik dalam meningkatkan prestasi mapan melalui pelaksanaan amalan kualiti. Kerangka kerja yang dibangunkan melalui kajian ini boleh digunakan oleh penggubal dasar dan pembuat keputusan. Para pengurus dalam industri perlu mempertimbangkan kepentingan model ini dalam melaksanakan sebarang amalan pada masa akan datang. Untuk masa hadapan, kajian longitud dicadangkan untuk menilai kesan TQM, kecemerlangan organisasi, dan ERP ke atas SP.

Kata kunci: polisi dan peraturan persekitaran; kecemerlangan organisasi; pengurusan kualiti menyeluruh; prestasi mapan.

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LIST OF ABBREVIATIONS

ACCA	Association of Chattered Certified Accountants
AFTA	Asean Free Trade Agreement
API	Air Pollution Index
AQA	Australian Quality Awards
ASEAN	Association of South East Asian Nations
AVE	Average Variance Extracted
BM	Benchmarking
CIIPM	Continuous Improvement of International Project Management
CO_2	Carbon Dioxide
CPI	Continuous Process Improvement
CR	Composite Reliability
CSF	Critical Success Factor
DEA	Data Envelopment Analysis
DOE	Department of Environment
EERP	environmental enterprise resource planning
EFQM	European Foundation Quality Management
EIA	Environmental Impact Assessment
EQA	Environmental Quality Act
ERP	Environmental Regulation and Policy
ESCC	Environmental-Oriented Supply Chain Cooperation
EUI	Energy Use Intensity

FBC	Food and Beverage Companies
FFP	Fish and Fish Products
FMM	Federation of Malaysian Manufacturer
GoF	Goodness of Fit
GSCI	Green Supply Chain Integration
GSCM	Green Supply Chain management
HMC	Hyundai Motor Company
HRM	Human Resources Management
IA	Information and Analysis
IFAC	International Federations of Accountants
IMP	Industrial Master Plan
IMS-QES	Integrated Management System and Quality Environment Safety
ISO	International Standard Organization
IT	Information Technology
IUH	Isfahan University Hospitals
JIT	Just In Time
KBS	Knowledge Based System
KMO	Kaiser-Mayrt-Olkin
LME	Largest Measurement Equation
LPS	Lean Production System
LSE	Largest Structural Equation
LV	Latent Variable
MAFMAG	Malaysian Food Manufacturing Group

MATRADE	Malaysian External Trade Development Corporation
MCS	Management Control Systems
MFCA	Malaysian Food Canners' Association
ML	Management Leadership
OCP	Organizational Culture Profile
OE	Organizational Excellence
PLS-SEM	Partial Lean Squares Structural Equation Modelling
PROUT	Progressive Utilization Theory
PWC	Price water house and Cooper
QA	Quality Assurance
QMS	Quality Management System
RBV	Resources Based View
SD	Service Design
SEM	Structural Equation Modeling
SME	Small and Medium Enterprises
SP	Sustainable Performance
SPI	Sustainability Performance Indicators
SPMP	Sustainability Performance Management Practices
TQEM	Total Quality Environmental Management
TQM	Total Quality Management
USA	United States of America
VIF	Variance Influence Factor
WWF	World Wide Fund

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Nowadays in the business of changing environment, it is required for any organization to examine its internal and external surroundings for challenges and opportunity in order to maintain growth and remain competitive (Ramlall, 2002). Seeking an excellence by leading the innovation has to be a priority in order for an organization to survive and grow in such environment. Notably, organizations in private and public sectors are striving hard to gain competitive advantages over other competitors and sustain their performance. However, to enhance the performance and how to implement different strategies are the issues that need to be investigated further. The goals and core businesses of every public and private sectors determines their performance. While achieving customer and quality satisfaction and good performance are the intention of the public sector, the private sector desires to achieve profits by customer satisfaction. According to Dewhurst, Martinez-Lorente and Dale (1999), to quench the need of the society and its ability and the budget available is the objective of many public organizations. Also, privates firms have less intangible objectives and goals compared to public organizations (Cinca, Molinero & Queiroz, 2003).

To achieve organizational excellence is the main aim of innovative and quality management implementation. According to Oakland Consultation (2005), business excellence practically supports organizational in accepting and dealing with change. Managers require sustainable excellence to have clear mission a clear mission which leads

a team of an organization to achieve goals by managing organization for stakeholders and customers and delivering values. According to Antony and Bhattacharyya (2010) excellence is the highest level and most outstanding performance; therefore, it should be of matter of concern to any organization. Nowadays, in achieving high record of performance, many organizations must struggle first in achieving organizational excellence in order to stand out from other competitors in the market. In contrast, Dahlgaard (2003) mentioned that many organizational have failed to achieve excellence due to lack of understanding of business excellence concepts and processes.

Upon the notion that the term organizational excellence is often used in the public sector, the term has emerged recently to be synonymous to business excellence (McAdam, 2000). In current literatures, organizational excellence is defined as a target point on the journey to quality (McAdam, 2000). Different organizations have different plans regarding the strategies that can help them to enhance their goals. In general, TQM is part of the most critical strategies to upgrade the positioning of an organization in the market. TQM is also one of the commonest and applicable managerial philosophies. The historical roots of TQM go back a long way; however it is still considered as modern term (McAdam, 2000). In fact, TQM has been expressed as a global and systemic approach to management in organizations by continuous and process improvement of sustainable performance for explicit and explicit satisfaction and anticipation of stakeholders and customers (Dean & Bowen, 1994; Grant, Shani, & Krishnan, 1994; Shiba, Graham, & Walden, 1993). Thus, the organization's purpose is not to have TQM but to adopt it to achieve excellence and to contribute in achieving competitive advantage (Mele & Colurcio, 2006).

Total Quality Management (TQM) comprises different critical success factors (CSFs) simply referred to as quality practices. As stated in the literature review, CSFs include: process management, philosophy development, benchmarking, quality measurement, information analysis, employee empowerment, commitment and top management, leadership, training and supplier quality management, customer satisfaction and involvement (Foster, 2007; Powell, 1995). In a similar way, TQM adoption has benefited improvement in sustainable development (Izvercian et al. 2014; Todorut, 2012); facilitating customer and production performance (Agus & Hassan, 2011); positive effect on labour productivity (Benavides-Chicon & Ortega, 2014); direct relationship of TQM on operational performance (Baird et al., 2011); influence on innovative in service organizations (Bon & Mustafa, 2013; Perdomo-Ortiz et al., 2006); and effects on educational systems (Militaru et al., 2013).

Generally, TQM is considered to be beneficial as regarded its results got from successful implementation. The successful results can be measured by different approaches; and the commonest approach is the benefit estimation of TQM through poor quality cost (Basu, 2014; Svensson & Wood, 2005). In other word, several scholars revealed that, performance improvement is the most paramount objective of TQM (Benavides-velasco, Quintana-garcia & Marchante-lara, 2014; Corredor & Goñi, 2011; Laxmikumari et al., 2014).

According to Christofi, Sisaye and Bodnar (2008), continuous process improvement is regarded as one of the three main principles of TQM after universal responsibility or total involvement and customer focus by proponents of quality movement. Continuous improvement process in terms of systematic improvement approaches is conceptualized

as continuous organizational process in order to look for a way to enhance the standardized documentation of quality assurance, effective feedback system manufacturing process improvement, complete incorporation of the quality assurance system, continuous evaluation of quality related strategy and continuous review of sustainable performance-related issues (Walsh , Hughes & Maddox, 2002).

In other word, Toremen, Karaku, and Yasan (2009) posited that the motive behind quality in TQM is traced to both the team and individuals through some developmental steps that stand for a system to quality assurance to be more accordant with the fundamental ethics and the organizational structures than many mechanistic and hierarchical processes. Catalin, Bogdan and Dimitrie (2014) stated that procedures for quality assurance on services and goods have continuous developed in accordance with the social, cultural and technological change that has indicated the rapid societal evolution. Quality assurance, based on clarification and comprehensive review is developed through three nonlinear stages: design and planning, production, post production and delivery (Abdous, 2009). In a few words and in terms of systematic approach, quality assurance is conceptualized as quality management practice that involves creating procedures and standards for quality (Cukier, et al., 2012); an activity providing evidences to all concerned in order to confidently establish that the quality function is being properly done (Karapetrovic & Willborn, 2000).

Leadership commitment and top management are critical factors mentioned in the past studies on TQM (Singh & Sushil, 2013). To provide facilities and work directions, to lead a process and take the full charges are the responsibilities of the top management (Vouzas & Psychogios, 2007). Leadership is determined as a very important factor by many

researchers in the literature (Bhat & Rajashekhar, 2009; Mashari et al., 2005; Oakland & Tanner, 2007; Vouzas et al., 2007). Kanji (2005) considered top leadership commitment as the major element in sustainable performance. Motwani (2001) portrays TQM as a house and the foundation of the house as the top management commitment. Therefore, with no strong base, a house cannot stand properly. From another perspective, leadership is an integration of intangible and tangible resources such as information and knowledge (Amit & Schoemaker, 1993). In addition, Zairi (1994) pointed out that leadership as a TQM element means providing the direction and vision to employees to follow, improving information ability sharing, improving communication skills, upholding enlightenment and promoting synergies value added. Moreover, important roles are being played by leadership in leading the entire organization to implement and adopt TQM practice successfully (Idress, 2011). Hendricks and Singhal (1997) stated that the high degree of leadership and top management support and commitment to TQM implementation, leads to higher degree of organizational improvement.

Human resources management is critical and significant factors which influence successful TQM implementation. HRM is another element of TQM critical and successful factor that consists of employee training, employee empowerment and employee involvement (Ahire et al., 1996). According to Akdere (2006) implementation of TQM through employees should create positive among them and lead to sustainable performance.

Many researchers and scholars are of the opinion that organizations need an effective benchmarking from the decision-makers of the organization sustain their mission (Yang, et al., 2015; Voss, Ahlstron and Blackmon, 1997; Veras et al., 2015; Veillard et al., 2013;

Shabunko et al., 2014; Saunders, Mann & Smith, 2007; Prado, 2001; Moriarty, 2011; Maheshwari & Janssen, 2014; Maheshwari & Janssen, 2013; Magd, 2008; Luu, Kim & Huynh, 2008). According to Moriarty (2011), benchmarking is defined to be a process in continuity, with the purpose to measure the procedures, goods and services of the strongest competitors leading the industry in existing markets. The idea is to extract the necessary pieces of information for an organization to be among the best at the forefront. In furtherance, Anand and Kodali (2008) reported benchmarking in variations through some key constructs such as: comparison, measurements and best practice identifications, improvement and implementations. It is reported from the study that, the quest for best good and service in an industry that will eventually lead to exceptional outcome through efficient implementation of best practice is called benchmarking. The knowledge-based system (KBS) belongs to benchmarking and benchmarking is considered as powerful tool for decision-making and process improvement of TQM (Lia, Huang & Wang, 2011).

Furthermore, in the study of Prajogo and Sohal (2006), information and analysis is reported to be part of the most paramount critical success factors of TQM. Kartha (2004) stated that information and analysis combines hardware, software, people and procedure. Many organizations were underscored by the present communication revolution to apply the recently devised technology in this present daily change technology environment in order to compete in the business market with other rivals and to quickly respond to this environmental instability. There are past literatures that support relationship between sustainable performance and information and analysis to be positive (Powell, 1995; Saraph et al., 1989; Sila & Ebrahimpour, 2005). Service design deals with customers' issues that are related to TQM factors. Lakhe and Mohanty (1995) added that the

satisfaction of the customer increases by properly designing the service while this at the end results to positive relationship between sustainable performance and the organization. Also, better service is derived from good design and ultimately reflects on the organizational process improvement that later lead to optimum competitive advantages. Also, many scholars found significant relationships between service design and sustainable performance (Anderson et al., 1994; Flynn et al., 1995).

Environmental quality is measured by the way and the rate at which environmental regulations and policies are being followed. According to Chervinski (2004), it is a feature of the regulatory social and natural relationships and the functional significance that depends on the capabilities to reflecting the process of utmost environmental safety. Santos-Reyes and Lawlor-Wright (2001) stated that the demands of compelling environmental regulations on production and end-of-life process of product is influenced by the concerns of customers to protect environments. Hak, Moldan and Dahl (2012) used environmental issues to study the environmental sustainability index. The study shows that there is no extensive discussion on environmental conservation and law in terms of environmental pollution. The study concludes that environmental accountability and transparency and proper information capacity for credible policy and enforcement leads to best performances internationally by various institutions in environmental activity.

Therefore, it has become necessary to comprehensively study the relationship between quality practices such as: management leadership; human resource management; information and analysis; quality assurance; benchmarking; service design; and continuous process improvement with organizational excellence, environmental regulation and policy and sustainable performance. The need for more studies on the

association between sustainable performance and TQM for provision with a comprehensive review of the current system of qualities of factory like present manufacturing procurements and procedures and application of management and standards in line with environmental, economic and social development in agro-based industry are the issues that prompted the purpose of this study.

1.2 Problem Statement

There is a current shift in paradigm and growing discussion on sustainability; this discussion mainly focused at first on the society level and sometimes regarding the environmental problems, it is now obvious that the topic is attracting attention internationally from worldwide (Zink, 2014). The relationships between quality management practices and sustainable performance have been examined by many studies (e.g. Ali & Alkayed, 2019; Brook & Pagnanelli, 2014; Daily & Huang, 2001; Ganapathy, Natarajan, Gunasekaran & Subramanian 2014; Glover, Cahmpion, Daniels & Dainty, 2014; Gond, Grubnic, Herzig & Moon, 2012; Idris, 2011; Isaksson, 2006; Iyer, 2018; Lee & Schaltegger, 2014; Lega, Prenestini & Spurgeon, 2013; McAdam & Leonard, 2003; Rose et al., 2019; Rusinko, 2005; Sisaye, Bodnar & Christofi, 2005) within distinctive contexts leading to mixed results (refer to page 99). There are still debating issues such as the best practices and effective brilliant strategies that lay emphasis on quality improvements leading to sustainable organizational performances (Idris, 2011). The inconsistencies in the results from the previous researches have called for more researches. The past studies lag behind to address the need to align managerial solutions and specific industry characteristics of sustainability to improve innovative effectiveness in decision-making (Brook & Pagnanelli, 2014).

As reported in the study of Prajogo and Sohal (2006), the inconclusiveness of the study of TQM's effects on performance sustainability is as a result of the ability and strategy of TQM to improve the strategic position of organization through quality and innovation. Additionally, the critical success factors (CSF) that affect the outcome of this relationship are: strategic planning, leadership, customer focus, people management, technology management, research and development, product quality, product innovation, process management, information and analysis and process innovation (Prajogo & Sohal, 2006). Although, the consequence of TQM may not be able to enhance competitive advantage for any organization but understanding quality management principles can achieve business excellence (Oliveira et al., 2017; Vora, 2002). The systematic and coordinated development of TQM serves as a trigger to gain business excellence and sustainable competitive advantage. Based on the findings by Vora (2002), it is concluded that TQM is expected to affect organizational excellence as a management philosophy (Mele & Colurcio, 2006) and then lead to sustainable development.

Stakeholders such as regulators, shareholders, board members and employees are increasingly asking and requiring organizations to be more environmentally responsible and sustainable (Rusinko, 2005). According to Ali and Alkayed (2019), constraints and barriers such as financial, social, steering and capacity factors are created by sustainability for professional practices for successful implementation of sustainable practices. Therefore, there is need to conduct an analysis on the current regulatory systems and processes in order to assess the practices in terms the concepts of sustainable development and the proposed panaceas to make them more sustainable. Thus, environmental regulation and policy as a moderator serves (Akanmu, Bahaudin & Jamaludin, 2017) as a

suitable mechanism to give explanation on the association between TQM practices and sustainable performance in order to settle the inconclusive results of the past studies.

One of the environmentally rich countries in the world is Malaysia. However, her heritage and tradition have been facing many environmental issues from exploitation of natural resources, water pollution and air pollution (Mohammad, 2011). Thus, several issues need to be overcome with great potentials of agro-based products to enable and sustain the local industry in order to remain competitive; the sales of agricultural produces in Malaysia are relatively low with global comparison which is traced to low entrepreneur's responses to production of quality and competitive agricultural-based products (Ahmad, 2009).

According to Adebowale (2013), underdevelopment is not limited to third world countries because developing countries like Malaysia also applied some public developmental policies and solved basic problems of agricultural declination and food productions. Malaysia has an economy that depends on sustainable businesses and improved performances of these organizations to meet the challenge of the economy in the transitioning to modern manufacturing state (Abdullah, 2010; Bin Magbool, Amran, Nejati & Jayaraman, 2016). Therefore, to boost indigenous technological capability has become one of the main development issues in Malaysia.

Additionally, within the past three decades, Malaysia has been experiencing rapid growth with natural resources that encourage opportunity from foreign direct investment (FDI) being fuelled by globalization and with improvement in livelihoods and society lives (Hussain & Byrd, 2016). However, recent issues of competition from neighboring countries and depleting resources have led to de-industrialization. Rose (2014) opined that

though natural resources are in abundance but highly restrained in some circumstance. Thus, there is need to tackle food production and agricultural declination in food and beverage companies in order to boost sustenance in the industry through abiding by the Environmental Regulation and Policy.

Several considerations are required to improve the performance of a company and the demand of food especially agriculture-based products with the rapid growth of Malaysia population. Historically, Malaysia is considered in the world as one of the environmentally rich countries with high biodiversity and mineral resources in abundance but at the present, its heritage and tradition are facing environmental issues such as air pollution, water pollution and exploitation and exploration of natural resource (Mohammad, 2011).

It is noteworthy that the Agro- business sector is one of the major generators of employment and income worldwide (Ogori & Joeguluba, 2015). In recent years, food and beverage companies has grown significantly which affects agricultural development policies to change to a wider systems from a pure production-oriented approach that emphasizes coordination of agri-food chain, institutional strategies and value creation under which the chains operate (Konig, Silva & Mhlanga, 2013). Foods and beverages manufacturing firms are finding it difficult to survive because of global economic recession and unfriendly operating environmental in which they operate. In Malaysia, 80% of small and medium enterprises are categorized as micro level and they are 99% business establishments; despite the great potentials of agro-based products, many issues (such as: lack of distribution capabilities and marketing to penetrate into the international and regional market; low quality in products and productivity; and inconsistent

productivity) are necessary to be overcome in order to enable the entrepreneurs to become competitive and sustain the industry (Ahmad, 2009).

Moreover in 2019, the revenues in the segments of food and beverages of Malaysian economy accounts for 268million USD. It is expected from the revenue to show a yearly growth rate of 18.0% (CAGR 2019-2023) leading to a market volume of 520million USD by 2023. Also, in 2019, user penetration is 19.5% and by 2023 it is expected to amount to 22.6%. Currently, the average revenue per user (ARPU) account for $42,28million USD. In comparison globally, China generated most of the revenue in 2019 accounting to 21.945million USD. The food and beverage segment is expected to show growth in revenue by 28.8% in 2020 (Source: Statistica, 2019). The number of users in the food and beverage sector by 2023 is expected to amount to 7.7million USD while the user penetration in the food and beverage sector is at 19.5% in 2019. The ARPU in the food and beverage segment in 2019 accounts for 42.28 million USD.

A share of 39.8% of users in the year 2017 is in high income group. Male users account for a share of 50.6% in the year 2017. The records shown are only in accordance with survey respondents who gave answers to the questions on their income. The data is based on the Global Consumer Survey of Statistica. China generated most revenue in food and beverage sector with a market volume of US$21,945m in 2019. The United Kingdom has the highest user penetration with a rate of 56.8% in the food and beverage sector. This information shows that, Malaysia as a country has the potential of competing with other developing and developed countries. Thus, exploring advancement in the area of food and beverage is worthwhile.

Manufacturing industry is responsible for consumption of a huge amount of resources and waste generation (International Energy Agency, 2007), increase of 61% in the consumption of energy between 1972 and 2004, and 36% of carbon dioxide (C02) emission in the world (OECD, 2009). According to NWRS Peninsular Malaysia, water demand is expected to rise by 63% between year 2000 and 2050. Hooi (2016) reported that there is increase in 27.2 % GDP in 2012 and 6.4% of GDP in 2014 in the economy of Malaysia and the manufacturing sector bolstered by strong domestic and export oriented industries grew by 5.5% in 2015 and 4.2% in 2016. Also, the value added increased by 4.5% according to the Malaysian Industrial Policy Studies, 2017; it is the largest contributor to the economy of Malaysia by also contributing to the 28.9% of the total employment (Bank Negara Malaysia, 2011).

More so, series of empirical studies attempted to link Quality Management practices to sustainable performance i.e. organizational learning (Smith, 2012); technological development (Soderholm et al., 2019); quality management system (Stanciu, Constandache & Condrea, 2013); human factors Zink (2014); strategic management principles (Todorut, 2012) and none of those researches has attempted to use organizational excellence and environmental regulation and policy as mediating and moderating variable respectively. So, there is a need for further study that will encapsulate the relationships between TQM, organizational excellence, sustainable performance and environmental regulation and policy becomes necessary (Chervinski, 2014). Additionally, many studies are conducted mostly on medium and small-sized enterprises (SME) level and hospital sector as in the studies of Allen and Kilmann (2001), Benavides-Chicón and

Ortega (2014), Chen (2013), Abdullah (2010) and Abu-Hamatteh et al. (2003) with no study in the area of food and beverages companies as it is best known to the researcher.

With the above past research studies on TQM, sustainable performance and organizational excellence and ERP in the Malaysian food and beverages companies, the problems in agro-allied industries were found to be low in sustainable performance, weak in innovation capacity, limited in opportunities for growth and development; unfriendly operating environment; unavailability of product readily throughout the year; low level of disposable income; poor infrastructure; and increase in toxicity of waste generated. Also, only few studies on TQM and sustainable performance with the moderating effect of environmental policy and regulation or mediating role of organizational excellence used PLS structural equation modeling (SEM). Therefore, more researches are needed on mechanism by which TQM operates and its influences across multiple level of organizational development and competitiveness advantages measured by customer satisfaction, financial and operational performance in conjunction with the impacts assessment of social, economic and environmental development in food and beverage companies as a sub-set of Agro-allied industry.

1.3 Research Question

In accordance with the research problem, the aim of the study is to investigate the relationship between benchmarking, information and analysis, management leadership, continuous process improvement, quality assurance, service design, human resource management, environmental regulation and policy and sustainable performance.

Generally, the aim of the study is to answer the research questions below:

1. Do TQM elements have effects on sustainable performance?
2. Does environmental regulation and policy have an effect on sustainable performance?
3. Does organizational excellence have an effect on sustainable performance?
4. Does organizational excellence serve as a mediator between TQM elements and sustainable performance?
5. Does ERP moderate the relationships between the TQM elements and sustainable performance?

1.4 Research Objectives

To examine the effect of benchmarking, quality assurance, management leadership, continuous process improvement and information and analysis, service design, human resource management as TQM elements on sustainable performance by involving ERP as a moderator and organizational excellence as the mediator is the general purpose of this research.

To be specific, this research has the following objectives:

1. To evaluate the relationship between TQM elements and sustainable performance.
2. To investigate the relationship between environmental regulation and policy and sustainable performance.
3. To investigate the relationship between organizational excellence and sustainable performance.
4. To evaluate the mediating effects of organizational excellence between TQM elements and sustainable performance.

5. To examine the moderating effect of environmental regulation and policy on the relationships between TQM elements and sustainable performance.

1.5 The Significance of the Study

The aim of the study is to provide related information on TQM, ERP, organizational excellence and sustainable performance with reference to Malaysian food and beverage companies as a field of study. The results of the study will contribute significantly to both theories and practices and will also be added to existing body of literature.

Past studies on TQM, ERP, organizational excellence and their impact on sustainable performance have been carried out separately. However, some previous studies have studied the relationships between some of them: for example, between TQM and performance, effects of organizational culture on TQM and sustainable performance, and ERP and performance. The joint examination of the effects of TQM, ERP, and organizational excellence on sustainable performance is however lacking in the literature. This study intends therefore, to fill the void of the literature within the context of business organization basically in food and beverage companies. Furthermore, this study shall suggest a conceptual framework that states the joint effects of TQM elements and ERP on sustainable performance under certain environmental conditions which are not in consideration before. As a result of the model testing of the relationships among variables, the research will provide evidence that performance can be at the highest level when combining the independent variables mentioned before.

In addition, the result from this study can be applied by practitioners, decision-makers and managers to achieve sustainable performance. This study can motivate and create

awareness among leaders in politics, business and socio-economy on what competencies and capabilities they have than can support for more improvement and development. Additionally, this study serves as a model worthy of following by private and public organization in Malaysia or in any other country. Private firms can equally adopt the outcome of this study to enhance their performance. This study can be used as a foundation to create policies and rules for the government of Malaysia in applying and practicing the study's model to achieve growth, development, and excellence of their service organizations to all sectors of the nation.

1.6 Scope of the Study

This study focuses on the effects of TQM elements and ERP on sustainable performance and mediating role of organizational excellence. On this aim, the Malaysian food and beverages companies are the population of the study while the study's data will be collected from top managers of the respective companies. Similarly, this study employed a quantitative approach in order to meet the aims of the study and answer the questions of the research. This comprises questionnaire survey given out to the heads of sections or sub-department among food and beverage companies. From the directory of Malaysian manufacturers, there are 420 registered food and beverages companies (2015, 5th Edition), headed by managers in different department and section. Furthermore, this study considers the FMM Malaysian food manufacturing group and Malaysian food canners' association (MFCA) for production and packaging of food and beverage respectively. Due to the complexity of the questionnaire structure capturing aspects like economics, sustainability, financial performance, environmental regulation and policy, quality management, organizational excellence, the questions can be responded together by the

directors managing research and development, marketing, finance, exports, operations management, secretarial and legal issues, human resources technicalities and other relevant departments based on the discretions of the company. Therefore, this survey was distributed to these directors in accordance with the samples selected. This study was conducted in the Malaysia food and beverages companies as a subset of Agro-based industry operating in conjunction with the agricultural industry by deriving and providing goods and services from agricultural produces.

1.7 Definition of the Key Terms

This section presents the definitions of various key terms used in this research. The definitions are contextual and relate to their applicability in this study. The key terms are defined in order to clarify the language used in the present study. These terms include benchmarking, information and analysis, management leadership, continuous process improvement, quality assurance, service design, human resource management, organizational excellence, environmental regulation and policy and sustainable performance as follows:

Management Leadership: Management leadership is the personal involvement and leadership of senior executives in setting strategic direction and building and maintaining a leadership system that are instrumental in facilitating high organizational performance, organizational learning and individual development

Benchmarking: Benchmarking is conceptualized in terms of best practices (e.g. capital investment and employee productivity, inventory control, liquidity control and cost control) identification that contributes to organizational sustainable performance

Continuous Process Improvement: Continuous process improvement which is also referred to as continuous improvement is an ongoing effort to improve processes, services and products and to reduce overall time, inspect quality control and to statistically control process charts

Service Design: Service design is operationalized as a quality practice that improves the processes in an organization which reflect in reduction of quality cost such as late delivery, scrap and rework, through review before marketing and functional department in the design team

Human Resources Management: HRM is an element of TQM strategy that includes employee empowerment, employees' training and employees' involvement.

Quality Assurance: Quality assurance is the sustenance of a desired point of service and product quality in particular by means of sensitive attention in every stages of the process of production and delivery

Information and Analysis: Information and analysis evaluates how effective measurement systems for understanding and improving performance is provided at all levels and in all parts of an organization

Environmental Regulation and Policy: ERP is an important policy and requirement that covers two issues: pollution control; and regulation of how much pollution such as undesirable materials and chemicals in achieving sustainable performance

Organizational Excellence: Organizational excellence is defined as quality process of the practices to improve the effectiveness of the organization, its competitive position, the

flexibility to work in, the participation of all the users in each sections of the organization to work together through the understanding of all activities and work on removing the error, and improve the process towards achieving excellence

Sustainable Performance: Sustainability performance is defined as a dynamic process that requires achieving short-term performance (meeting current needs) without compromising the long-term performance (future needs); a perspective has emerged that defines sustainability to include three components: the environmental, social, and economic performance

1.8 Summary of the Chapter

The fundamental issues of this study are discussed in this chapter as a gateway to the study; the section serves as introductory step. Through the research background, the section outlines the events and highlights the reasons that prompted the study. This is specifically and further extended as the problem statement of the study. The objectives and questions of this are elicited in connection with the problem statement highlighted. Generally, this section is a gate-way to this study by brief introduction of each component of the subsequent chapters. Finally, the section discussed the coverage scope of the study, and theoretical and practical contribution to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The foundation of this study is presented in this chapter. Past studies are reviewed in this chapter and literatures so as to justify the developed research questions and hypotheses. To achieve this, literatures of past related studies on TQM and its core elements, ERP and sustainable performance are discussed. The chapter presents the concepts of TQM, organizational excellence, environmental regulation and policy and sustainable performance. Other sections that follow in this chapter discussed the empirical studies and established linkages between the variables of TQM and sustainable performance as well as the moderating and mediating roles of environmental regulation and policy and organizational excellence respectively. Regarding the underpinning theories, Contingency theory, Institutional theory and all other related theories were discussed and the chapter explains the reason for the choice of the theories.

2.2 The State of Food and Beverages Companies in Malaysia

The Agro-business sector is one of the major generators of employment and income worldwide. In recent years, food and beverage companies has grown significantly which affects agricultural development policies to change to a broader systems from a pure production-oriented approach that emphasizes Agro-food chain coordination, institutional strategies and value creation under which chains operates (Konig, Silva & Mhlanga, 2013). Agro-allied firms are finding it difficult to survive because of global economic recession and unfriendly operating environmental in which they operate.

The concern for the environment and sustainability was aggressively rooted way back in the Third Malaysia Plan (1976-1980) as Malaysia built its economic foundation. It is revealed by World Wide Fund (WWF) Malaysia in 2007 on Environmental Stewardship also that 57% of the populace can be said to have good environmental behavior. Agro-allied and food processing industries in the recent times are becoming prominent with the prohibition of some certain grades of food and their importation as enacted by government policy according to Malaysia Competition Commission (MyCC, 2019).

In 2015, there were 167, 490 of food and beverage establishments which since 2010 represents an annual growth rate of 2010 as shown by the Department of Statistics in Malaysia. The gross output generated by the services in these establishments was 66.4billion Ringgit which represent a total of Rm29.1 billion or an annual growth of 12.2% since 2010 as revealed by the economic census of food and beverage services (The Department of Statistics, 2017).

Therefore, in 2015 there was 12% increase annually in value-added totaling to Rm28billion. With more number of persons engaged in food and beverage services growing to 891,616 persons i.e. by 6.7% annually, more people were employed. According to Department of statistics (2017), a total number of 569, 632 persons were recorded as paid full-time employees with percentage shares of 63.9% while unpaid family workers and working proprietors 254, 364 persons (28.5%) and paid part-time employees of 67, 620 persons (7.6%). In 2015, the total wages and salary paid to those engaged in the sector was Rm9.7 billion compared to Rm4.9billion with annual growth rate of 14.4% in 2010. Also, in 2015 the women entrepreneurs showed growing participations in food and beverage services with 56, 346 women-owned establishment

comprising about a third of the total number of establishments. An annual growth rate of 0.9% is represented by 0.9%.

The voice of manufacturers in Malaysia since 2nd of July has been the Federation of Malaysian Manufacturers (FMM). The body is committed to service and quality excellence; FMM operates as a business organization that supports and promotes the interest of manufacturing sectors in the business of FMM. The body is an ISO 9001: 2008 certified company. The company is chaired by the industry groups, states branches, industries' captains at council and oriented-working committee of other issues. It represents the manufacturing sector at the industry sub-sector, local authorities, national, state, regional and international levels. Similarly, a wide range of activities and services are offered by the FMM to facilitate the business operations. For those who are looking for connection for investment, services and trade with the manufacturers in Malaysia, the companies are an important focal point (FMM Industry Directory, 2015). The industry is divided into two categories: the FMM Malaysian food manufacturing group (FMM MAFMAG) and Malaysian Food Canners' Association (MFCA) for production and packaging of food and beverage respectively.

On September 24, 1984, the FMM MAFMAG was founded under the aegis of the Federation of Malaysian Manufacturers in an attempt to stand for the interests of the food manufacturers in the industry. The FMM MAFMAG has the following objectives:

- To stand as a linking organization promoting cooperation among the Malaysian food processing industries;

- Formulating recommendation on market protection, investment incentive and other measures in order to enhance development promotion in Malaysian food processing industries;
- To serve as a path of connection between the food processing companies and the government on the matters of particular interest and concern to the particular industries; and
- Interest promotion of the industries on food processing in Malaysia in the region of ASEAN through effective involvement from the activities in the region.

Officially, the Malaysian Food Canners' Association (MFCA) was established in 1973 while it was being registered as for relationship with the Malaysian Registrar of Societies. The following objectives belong to the MFCA:

- To regulate, monitor and safeguard its members' interests;
- To apply and provide a forum for correction and code of guidance for members and discussion of trade abuses;
- To gather and share related information for the benefit of the members;
- To promote and upgrade the business/trade of canning.

Their main activities are:

- Holding dialogue with the ministries and agencies of the government and relevant organizations;
- Submissions of proposals and comments on the amendments to the Food Regulation 1985 and the Food Act 1983;

- Involvement of the committee of national CODEX and its sub-committee on fish and fish products (JKCK FPP) that formulate and evaluate the stands of the nation in terms of standard of fish and fish products of CODEX.
- Meeting involvement of the cluster working group on food processing industry under IMP2

The categories for Food and Beverage companies are as following:

- All dairy products, coating fats, butter, vegetable and animal oil and shortening
- Production, processing and preservation of seafood and meat products
- Production, processing and preservation of vegetables and fruits
- Canned, preserved and frozen food, biscuits and snacks
- Noodles, grains and other starch products
- Chocolate and cocoa confectionary, bakery and sugar products
- Condiments, flavorings, sauces, seasoning and spices
- Animal feeds
- All drink types, beverages and relevant products
- Other non-classified drinks and foods

According to Glover, Champion, Daniels & Dainty (2014), the necessity for practices of sustainability in the food production is becoming acute especially in the area of energy production. Currently, the food industry has to contend with multiple competing pressures alongside with the new challenges in sustainable production. The production index for food and beverage industry increased by 4.4% due to strong domestic demand among the sub-sectors which recorded significant increase in production were cocoa, chocolate and

sugar confectionery (15.5 percent), biscuits (12.2%), other processed food (8.8%), flour milling (3.4%) and sugar refineries (1.4%) according to Saleh and Ndubisi (2006). Nevertheless, with annual imports of more than USD 3.2 Billion/ RM12 Billion Malaysia still continues to be a net importer of food products despite the fact that over the year, the export performance of this sector has multiplied (FMM-MATRADE Industry Directory, Food & Beverage, 2015).

Abd. Aziz and Yassin (2010) examined marketing orientation business and marketing practices among the agro-allied sector in Malaysia SMEs by examining the impacts of the external environments on the performance of the market orientation. The importance of market orientation for agro-food organizations is established in this study in order to achieve sustainable competitive advantage by relating the degree of market orientation to the extent of success to attain critical performance results. By applying the environmental regulation and policy control effort, the study contributed to the knowledge concerned with quality management and sustainable development of food and beverage companies Malaysia.

Buniamin (2010) revealed that generally, business organizations are facing the challenges of disseminating environmental information as public concerns regarding these issues have significantly increased. Chemical, mining, gas and petroleum, transportation, tourism, manufacturing, construction and food industries are among industries which are very sensitive to the environment. Environmental reporting is exclusively a voluntary initiative in Malaysia and has emerged in the last decade. Even though the Association of Chattered Certified Accountants (ACCA) in conjunction with the Department of Environment (DOE) in Malaysia published a paper titled: "Environmental Reporting

Guidelines for Malaysian Companies" in March 2003. The study concludes that in Malaysia, environmental reporting is still at the stage of infancy.

With global comparison, the sales of agricultural products are still low. This is as a result of low ability of local entrepreneurs in producing competitive and agro-based products. The study reported that only 20 SMEs are considered successful from 237 agro-based producers in Malaysia due to their good sales performance and marketing ability (Ahmad, 2009). The study concluded that to support the intention of the government in developing agriculture sector as the third engine of growth, more efforts are needed. Yusoff and Wen (2014) examined the evolution of Malaysian environmental policy. The study analyzed the relationship between the international and domestic drivers as related to the broad objectives of sustainable developments as defined as "non-declining utility" of the natural endowment. In other word, the impressive economic achievement of Malaysia has alleviated poverty and promoted human development while the adverse effect of environmental change has raised doubt to its inter-generational and sustainable equity. The study shows that the paths taken the policy of Malaysia on environmental issues and natural resources bear the features of path dependent evolution.

According to Adebowale (2013), an enduring public development policy is negotiated by Malaysia to solve the fundamental problems of agricultural backwardness and food production. The policies appear to be informed relative to best agricultural policies with clear link between critical researches funded by the public and private sectors, enough budgetary allocation and technological dash. In Malaysia, the agro-allied sector undoubtedly played important roles in the economy of Malaysia; as the target population of this study, the body of knowledge of this sector is worthwhile to be expanded.

As noted by Ahmad (2009), Malaysian agro-based products are still low in sales and marketing. Additionally, participation of local businesses in this sector are still in initial stage. Therefore, the objective of the Third National Agricultural Policy (DPN3) is to ensure better strengthening of network and marketing delivery through strategic alliances. Several issues need to be overcome with the presence of great potentials of agro-based products in order to sustain and enable the entrepreneurs and local industry to remain competitive. The total budget for 2010 is RM6 billion which was exclusively earmarked solely on agriculture. The agribusiness industries and ministry of agriculture cover the major portion. The allocation is earmarked for the improvement and advancement in agriculture as its impact cuts across the development of irrigation facilities, drainage requirement mainly in rice-growing regions and development of farm infrastructure.

Aziz and Yasin (2010) explored the industry of food and beverages by studying the association between market orientation and firm performance. The idea that market orientation is collectively and independently has positive relationships with organizational business performance has been empirically and conceptually supported by the past studies. The objective of the study is to evaluate the various orientation, business performance and practices among the agricultural food sectors in Malaysian SME. From the factor analysis result of market orientation, three dimensions namely inter-functional coordination, information dissemination and customer-competitor orientation are extracted from the data survey analysis comprising 102 agro-food organizations. The two dimensions, competitive intensity and market-technology turbulence produced by factor analysis has no effect of moderation on the relationship between the market orientation and business performance in the agro-food organizations.

Expectedly, the food sales in Malaysia between 2015 and 2020 are to grow more than 7% yearly (PwC, 2015). Similarly, the food and beverages sector in Malaysia is increasingly sophisticated and influenced by convenience trends and health. The need for natural and organic foods; minimally processed fresh and functional food has been created by the consumers' awareness on healthy lifestyle and nutrition. Recently, there has been significant shift towards higher valued and imported items such as wine, dairy, meat, organic and confectionery foods from buying commodities like rice and fish (Source: EuroMonitor, 2015). Also, there is continuous transformation in the food retail sector as more consumers shift from buying products from wet markets to supermarkets through the use of services of home delivery.

The uniqueness in the food scene of Malaysia is in its multi-cultural population which consists of Malay, Chinese and India and a sizeable number of western and expatriate communities. This led to high demand of processed and fresh food, Halal-friendly products and beverages. Malaysia is widely known as a market for Halal food and a hub for re-exportation to other neighboring Muslim nations with 60% of the population being Islamic adherents according to the Euro Monitor (2015). Presently, 700billion USD is the estimated amount of the global Halal food industry.

Therefore, as previously posited, there are imminent and serious challenges regarding the situation of performance of agro-based industry in Malaysia. It is then necessary for Malaysian food and beverage companies to redefine improvement strategies and effective performance with environmental regulation and policies.

2.3 Sustainable Performance

In recent years, sustainability issues are gaining greater prominence among organizations and their stakeholders around the world (Caiado et al., 2018). Sustainable performance is achieved in business when a company or a firm builds continuous value for its stakeholders and shareholders while abiding with the environment requirements (Brent' & Labuschagne', 2004). Sustainable value of a firm has few essential parts which are: making the shareholders and customer happy and more importantly, performing well for the society and environment (Hassan, Akanmu & Yusoff, 2018). According to Dunphy (2011), "sustainable consists of actions that extend socially useful life of the organization, enhance the ability to maintain and renew viability of the biosphere and protect all living species, enhance ability of society to maintain itself and to solve its major problem and to maintain a decent of welfare, participation and personal freedom for present and future generations of humanity".

Furthermore, sustainability is a product of performing business and transaction towards sustainable enterprise which are made by creating innovative and constructive corporate culture (Hassan et al., 2018). The developed healthy culture can then create enabling environment high performance to maximize the use of available assets in a way that leads to good outcome within the environment, economy and society (Dunphy, 2011). Caiado et al. (2018) reported that internal organizational factors are the main inductors of the sustainable environment in organizations, and sustainability must be tied to strategic planning, starting from upper management to lower levels. It is essential to use sustainable performance measurement systems in order to respond to external and internal levers and serve as benchmarking for future corporate operations and strategies.

Chen et al. (2010) pointed out that, there are three categories of sustainable performance: social, environmental and economic sustainable performance. By making emphasis on the significance of environmental protection, economic growth and social cohesion to work together, in 2001, the European Commission published a sustainable development strategy (Pei, Amekudzi, Meyer, Barrella & Ross, 2010). The sustainable management in supply chain is addressed by Guan, Cheng and Ye (2010) as "a modern management pattern emphasizing on the integration of the economy, environment, and society through all the processes including procurement, producing, packaging, transportation, storage, consumption and disposal of the end-life product, supported by supply chain management technology, and its final goal is to achieve the sustainable development of economy, environment and society". This indicates the importance of sustainability in supply chain management.

In this changing and competitive business environment of today, manufacturing companies are struggling to achieve sustainable performance as it is part of the expectation from stakeholders. This is a pragmatic way that environmentally reduces impacts and enhance the firms to increase values of their businesses (Ganapathy et al., 2014). Therefore, without measuring the current situation of any organization, it is impossible to facilitate sustainability performance. Despite the comprehensive studies performed in previous literatures on sustainable performance, the scholars have no mutual agreement yet on the precise concept of sustainable performance (Ford & Schellenberg, 1982; Joannessen, Olaisen & Olsen, 1999).

According to Brook and Pagnanelli (2014), limited attention is paid to issues on how to incorporate sustainability with innovation portfolio of management decision-making

while significant progress has been covered in achieving an efficient project portfolio management. The study presented a five-step framework for incorporating sustainability in the process of innovation project portfolio management in the field of product development using economic, social and environmental sustainability as the three dimensions.

Additionally, Sezen and Cankaya (2013) examined the effect of eco-innovation and green manufacturing on corporate sustainable performance in terms of social, economic and environmental. The implementation of green manufacturing has a significant and positive effect on both social and environmental performance. In addition, there is a significant and positive relationship between eco-process innovation and corporate sustainability. However, there is no significant direct relationship between eco-innovation with each of the three types of sustainable performance. The relationship between green practices and performances has been a subject to many studies with inconclusive results. Similarly, Sisaye, Bodnar and Christofi (2005) reported that organization prepare sustainability reports that contain economic, environmental and social performance data.

Brent and Labuschagne (2004) in the same vein reported that companies that are in global competition are more expected progressively to report and commit on the overall performance of sustainability in operative initiatives such as technological innovation or accomplished projects. A comprehensive assessment has shown that the present indicator framework that are available to measure the total business sustainability do not address effectively all aspects of sustainable performance at the level of technology and project management. Indicators of sustainable development are introduced and discussed through

an assessment procedure specifically for the social and environmental dimensions of sustainability.

Ali and Alkayed (2019) classified the barriers that stand as obstacles for successful implementation of sustainable practices into four domains: social/cultural, financial/economic, steering and professional/capacity barriers. The social or cultural barrier includes factors related to interest and awareness. The economic or financial barrier includes the factors related to the initial cost, incentives and investments. The factors that are related to regulations, standards, supports and codes are classified under steering barrires. Lastly, the capacity or professional barrier includes the factors related to the professional knowledge, design team, education and materials. The study concludes that it is necessary to find laws binding that will raise awareness among different sectors on the implementation of sustainable practices.

Therefore, the proposed framework applied to assess sustainable performance in this study is classified into three measurements as supported by previous studies on sustainable performance. The measurements are social sustainability, economic sustainability and environmental sustainability. Thus, in order to absolutely embrace the idea of sustainability, these three measurements or dimensions of sustainable performance are critical to paddle a business successfully for now and the nearest future (Eweje, 2011).

2.3.1 Economic Sustainable Performance

Economic sustainability continues to be one of the main objectives of business organizations. In other word, it is defined as “the evaluation of organizational cost reduction, that promotes market shares, returns on assets, improves income and profits

regarding the economic goals of performance" (Green et al., 2012; Liu et al., 2012). Better economic performance is achieved through the application of practices of GSCM among the manufacturing industries (Green et al., 2012). Liu et al. (2012) reported that positive results from economic aspects can be achieved through direct multiple ways of sustainable supply chain management. Past studies from Eltayeb, Zailani and Ramayah (2011) examined the initiatives of green supply chain among the Malaysia companies that are certified and the results showed positive relationships between supply chain initiatives and economic performance.

Consumers play a huge impacts by demonstrating environmental consciousness and influence in choosing companies as they are primary drivers of green practice implementation, thereby contributing to increase the economic performance and competitiveness of the company (Andic, Yurt & Baltacioglu, 2012). Zhu, Sarkis and Lai (2012) reported that companies with sustainable performance practices can achieve and improve the performances of their economic growth in terms of tax, profit, income and financial welfare of the employees. Chien and Shih (2007) highlighted the importance of economic sustainable performance where integrative GSCM is discovered to be beneficial to cost reduction, market share promotion and increase in enterprise profit. Chan, He and Wang (2012) examined corporate and environmental performance and showed that there is significant relationship between GSCM and sale growth, tax return on investment, market share and earnings growth of firms.

2.3.2 Social Sustainable Performance

There is huge responsibility on business firms socially on why it is necessary to take care of societies and employees. Social performance is the "evaluation of organization on

healthy work environment, social commitment and participation, education and training, and human resources development" (Teraji, 2009). The study reported that there is increase in the consumer's awareness on corporate social performance as the management continuously recognizes their responsibilities for ethical program implementation in order to enhance social welfares. Thus, proper assessment should be given to domains such as: human rights, environment, human resources and corporate governance (Bessire & Onnee, 2010).

Furthermore, social sustainable performance is achievement in establishing social welfare for stakeholders like customer, employee, supplier and society as a result of undertaken operational moves (Brent & Labuschagne, 2004). In details, the management has complete responsibilities in the application of healthy working environment, human resources management, social involvement and participation and social administrative policies. Additionally, their responsibilities include social response and concern, working condition, employee benefits, public welfare supports, talent development and staff relations (United Microelectronics Corporation, 2012). Organizations can easily achieve their vision and mission and stay in the market competition when they successfully experience sustainable performance.

2.3.3 Environmental Sustainable Performance

Business firms are being driven by environmental consciousness and concerns in order to look into their operational performance. According to Junquera, Brio and Fernandez (2012), environmental sustainable performance is defined as **"**the evaluation of organizational reduction for emissions, decrease of consumption for hazardous or harmful materials, and efficient energy or resources use". Environmental sustainable performance

is the achievements in mitigating the waste generated, polluted emitted and resource usage as a result of undertaken efforts (Brent' & Labuschagne', 2004). Environmental sustainable performance is related to environmental goals of organization including the solution to improving the environmental situation of the enterprise and reduction of frequent accident in the immediate environment (Chien & Shih, 2007). To decrease environmental risk, environmental performance can also be a useful indicator; also, it is useful to support policy making and external communication for both private and public sectors (Mazzi, Mason, Mason & Scipioni, 2012).

Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony that permit fulfilling the social, economic and other requirements of present and future generations (Cherrafi et al., 2016). In the manufacturing sectors, sustainability aims to create manufactured products which use processes and practices that maximize profits, minimize negative environmental impacts, conserve natural resources and energy, and are safe for employees, consumers, and communities. The Table 2.1 reveals that the benefits of measurements of sustainability especially when integrated are more important drivers to implement sustainability. The benefits obtained from these TBL dimensions are more important than considering strategies separately because of the wider scope considered in integration.

Table 2.1
Benefits of Sustainability

Dimensions of Sustainability	**Benefits**	**References**
Social performance	Improve employee morale and commitment. Improve the working environment.	Ng, Low & Song (2015)

	Optimize the human resources applied to waste reduction.	
	Improve employee awareness about environmental, health and safety issues.	
	Improve team spirit and cohesiveness	
Economic performance	Reduction of costs.	Pampanelli, Found & Bernardes (2014)
	Improve the company's profit.	
	Improve marketability of the products.	
	Meet customer expectations.	
	Increase in the reliability of processes and equipment.	
Environmental performance	Reduce environmental impact and increase environmental benefits.	Cherrafi et al., 2016); Ng et al., (2015)
	Improve resources efficiency.	
	Avoid risks from noncompliance with regulatory requirements.	

2.4 Total Quality Management (TQM)

Many researchers have been carried out to measure TQM and sustainable performance (Abu-Hamatteh, Al-Azab, & El-Amyan, 2003; Agus & Hassan, 2011; Allen & Kilmann, 2001; Abdullah, 2010; Baird, Jia Hu, & Reeve, 2011; Basu, 2014; Benavides-Chicon & Ortega, 2014; Bon & Mustafa, 2013; Casas, 2011; Catalin, Bogdan, & Dimitrie, 2014; Christofi, et al., 2008; Williams, Babatunde, & Jeleel, 2012; Wei, Zhao, & Zhang, 2014;

Vural, Vardarlier, & Aykir, 2012; Vatalis, Manoliadis, & Mavridis, 2012; Tarí, et al., 2010; Mishra & Mohanty, 2014; Stanciu, Constandache, & Condrea, 2014; Sahai & Srivastava, 2012; Rodrigue, Magnan, & Boulianne, 2013; Adeoye & Elegunde, 2012; Malmström, Wincent, & Johansson, 2013) generally.

The transformation of quality moved from the evolution of quality inspection to quality control and quality assurance and then to TQM finally (Al-Khalifa & Aspinwall, 2000). The study explained that the continuous revolution has transformed organization from ineffective environment with dependence on hierarchical control, autocratic leadership and inspection by paying attention to customer satisfaction and needs, while receiving quality and continuously developing processes. It is noteworthy that there are five phases under quality management: quality inspection, quality control, quality assurance, TQM, Excellence models including Six Sigma and Lean manufacturing (Tran, Cahoon, & Chen, 2011).

Historically, TQM originated when the statistic theory was implemented to the management of quality of product in Japan in the 1920s (Laxmikumari, Kumar, & Ramana, 2014). It was later developed by Juran, Feigenbaum and Deming by widening the focus from product quality to the overall qualities in the organization. Rungtusanatham, Ogden and Wu (2003) examined the advancing theory development of TQM from 'Deming management method' perspective. The study explained the Deming management method as related to scientific contribution and research to the TQM theory development by highlighting two research paradigms relevant to the methods of Deming management such as: the Deming-based theory of TQM and the concepts of profound knowledge.

The scholars of quality management Crosby (1979), Deming (1989) and Juran (1988) have contributed to the fundamental frameworks of the practices under TQM. The development of TQM from 1950 onwards is credited to these American experts; they contributed immensely to the continuous improvement of the subject. In addition, Casas (2011) posited that historically, TQM has evolved from four stages from the contribution of Joseph Juran, Philip Crosby and Edward Deming categorizing them into quality inspection, quality control, quality assurance and TQM. The Table 2.2 shows the different stages in the development of TQM and their respective characteristics:

Table 2.2
Characteristics of the Different Stages in TQM

Stages	**Characteristics**
Quality Inspection (1910)	Salvage, Sorting, Source identification of non-conformance and Corrective action
Quality Control (1924)	Quality manual, Performance data, Self-inspection, Product testing, Quality planning, Use of statistics and Paperwork control
Quality Assurance (1950)	Third-party approvals, System audits, Quality planning, Quality manual, Cost quality, Process control, Non-production operation, Failure mode and effect Analysis
TQM (1980)	Focused vision, Continuous improvements, Internal customer, Performance measure, Management leadership, Prevention,

Stages	Characteristics
	Company-wide application, Interdepartmental barriers and Management leadership

Source: Dahlgaard et al. (2008)

Abu-Hamatteh et al. (2003) explained that for TQM to be achieved at enhancing the competitiveness and performance excellence in SMEs, businesses and manufacturing companies, five areas of TQM which are leadership, strategic planning, process management, resources management and results must be focused. The concept of TQM has been adopted since 1980 together with a strategic approach to quality with the aim of focusing on all the resources in achieving excellence (Benavides-Chicón & Ortega, 2014). Therefore, TQM is believed to be a major innovation in the field of management from the last decades (Izvercian et al., 2014).

With the use of four-core Kaynak practices of TQM of which are: quality data and reporting, supplier quality management, process management and service and product design. Baird et al. (2011) conducted an empirical study on the relationship between the measurements of organizational culture profile (OCP). Additionally, design and process management are two important parameters of TQM (Ahire & Dreyfus, 2000) that are distinctively different in terms of improvement target and technic visibility. Also, the evolution and rise of TQM led to a big change in the last two decades with the way companies were being managed but was recognized with terms like TQM, total quality, process improvement and continuous improvement. Meanwhile, Catalin et al. (2014) stated that the first action to be taken during TQM implementation is identification of the

level of quality provided by the organization through its services and products. The study listed training, planning, evaluation and implementation as the stages in TQM evaluation.

Christofi et al. (2008) explained that the practice and theory of TQM has evolved over the last three decades to a supply-chain-wide delivery of excellent products and services from the technical aspects of employee training and quality control. The concept of TQM reinforces the quality from the customer perspective to be perceived by the companies and the point of focus for TQM is the definition given to quality by the consumers or customers (Moreno, Giner & Luzón, 2009). The reinforcement categories of the employees being the basis of the concept of TQM are: providing required knowledge to the employees for them to comprehend what sustainable performance is and participate in it; knowledge sharing on the sustainable performance with the employees; reinforcing the employees to take proactive decision in the organizational management effectively; and awarding relevant tasks on sustainable performance (Duran et al., 2014). However, insufficient data and information in organization on critical factors is a hindrance to implementation of TQM in an effective way (Psomas & Fotopoulos, 2010).

A general concept is provided by TQM for continuous process improvement in performance and quality (Jonsdottir, Ingason & Jonasson, 2014). It was agreed by researchers that, TQM is a managerial philosophy that emphasizes on consistent, systematic and integrated perspective involving everyone and everything. However, there is variation in the definitions of TQM. Quality management is provided a general framework by the quality award model. The rate of success in TQM has not been high despite the fact that TQM has been widely considered as a practice to improve performances and quality such as market and profit share. For instance, it was found from

a survey of 500 companies that around two-third of the TQM programs have ground to a halt while less than one third of the respondents have achieved a thing (Sun, 2000). To investigate the impact of TQM performances in order to understand the success of TQM, many studies have been carried out. However, relationship between quality and product productivity is considered more by researches.

Töremen, Karakuş, and Yasan (2009) give a breakdown and comprehensive explanation of TQM by explaining its concepts of such as Total, Quality and Management. The study explains that all departments, levels and divisions of the organization are engaged in TQM with its operations and strategies around the needs of customers and cultural development with high employee participation. As studies for the principal keys to success in TQM implementation has become a matter of deep concern in the world to management of companies, researches on the critical factors related to TQM implementations are highly needed.

In contrast, another studies stated that the adoption of TQM is wide as an integrative management philosophy (Fok, Fok, & Hartman, 2001; Kahreh, Shirmohammadi & Kahreh, 2014). It is regarded as a philosophy that focuses on continuous process improvement of process quality and products in order to achieve the customer expectation. TQM is another approach considered to enhance competitiveness as many organizations have realized that quality improvement is a critical factor to achieve global competition. Meanwhile, there are still few organizations that are less successful in their undertaking of TQM due to primary reasons like unrealistic expectations with a stipulated time, lack of motivation, lack of employee cooperation and failure to sustain and develop a culture of quality orientation, lack of top management commitment and cost of TQM

implementation (Catalin, Bogdan & Dimitrie, 2014). In general, TQM requires cross-functional thinking planning and doing (Svensson & Wood, 2005); it has become worldwide management topic and its most emphasized concepts include customer focus, process management, human resources management and continuous improvement (Isaksson, 2006).

Furthermore, Izvercian et al. (2014) investigated the association between TQM and human resources management regarding continuous improvement in a system. The study stated that human resources management as part of quality planning is practiced at the enterprise level and it is directed to the needs of the closest customer. The aim of the relationship is to enhance performance – both in the performance of people and quality of the system. Tarí (2005) explained the successful components of TQM to be: continuous improvement, management leadership and commitment, customer-based approach, fact-based management and quality planning. The study states that those components must be implemented by managers in order to integrate TQM as a management system on developing competitive advantage and quality. Kahreh et al. (2014) explained further that TQM evolved as a fashionable management innovation in response to the lack of competitiveness in the US manufacturing companies during the 1980s and the emergency of Japanese firms in delivering quality products and services in connection with operational efficiency and customer demands. The movement of TQM advocates for implementation and development of a corporate wide culture by focusing on employee empowerment, customer satisfaction and data driven policy decision (Kannan & Tan, 2005).

Sharma, Lawrence, and Lowe (2010) stated that the TQM routines in an organization has been recognized to be integral part of the process to add and enact legitimacy to management control systems (MCS) changes within the organizations. TQM is developed as a result of global competition (Ahmad *et al*., 2014). The study in order to ensure sustainability shall investigate the impacts of TQM on sustainable development. Moreover, the quest for more study to fill the void on sustainable development study, its specific need in food and beverage companies, the proposed theoretical extension of involving TQM in the assessment framework, the conceptualization and generalizability of key elements of TQM to meet the peculiarities of social, economic and environmental growth are the issues that provoked the essence of this study.

Siddiqui, Haleem and Wadhwa (2009) opined that many analytical studies have examined TQM and flexibility in organizational systems has been researched to a great depth in the past. Also, Ahmed et al. (2014) conducted an explorative study of moderating effect of ASEAN "Association of South East Asian Nations" Free Trade Agreement (AFTA) on TQM practices and business performance due to high competition in today's market which demands for quality to facilitate the survival of the companies in the global market. In the same way, the relationship between successful implementation of organizational culture and TQM was determined through cross-cultural context on organizational structure (Rad, 2006).

In addition, Calvo-Mora et al. (2014) evaluated the association between the technical and social factors of TQM and their effect on organizational results making with references to the European Foundation Quality Management (EFQM) model. The results reveal that a flexible, continuous improvement oriented and open culture, an involved and committed

leadership and effective management of human resources (social factors of TQM) have significant and direct effect on the success of the quality system deployed (technical factors of TQM). Similarly, Zárraga-Rodríguez and Álvarez (2014) opined that TQM models and practices help organizations to achieve significantly in their results, performance and increase competitiveness when EFQM model is employed with introduction of information capability. The more the positivity in the relationship that exists between sustainable performance and TQM practices, the higher the degree of market competition (Chong & Rundus, 2004).

Generally, TQM is implied to be beneficial as regarded its results got from successful implementation. The successful results are measurable; and the commonest method is benefit estimation of TQM through quality (Huang & Lin, 2002; Ahire & Dreyfus, 2000; Basu, 2014; Svensson & Wood, 2005). Past studies have shown that, one of the impotance of TQM is to improve sustainable performance (Tannock, Krasachol, & Ruangpermpool, 2002; Benavides-Velasco, Quintana-García, & Marchante-Lara, 2014; Kumar, et al., 2009; Abdullah, 2010; Corredor & Goñi, 2011; Duran et al., 2014; Kannan & Tan, 2005; Laxmikumari et al., 2014).

The adoption of TQM and corporate social responsibility improves the ability of hotels in creating benefits for stakeholders and the outcome has positive impacts on sustainable performance (Benavides-Velasco, Quintana-Garcia & Marchante-Lara, 2014). To support companies facing both ever-growing social and environmental pressure and the need of customers, the use of design management for sustainability is a tool of effective design management that allow performance of designed activities in compliance with the sustainable goal (Fargnoli, De Minicis & Tronci, 2014).

In all these views of scholars about TQM approaches, it was evidently established that TQM practices required team work, quality planning, quality training, continuous improvement process, management commitment, focus on customers, benchmarking, quality assurance , focus on processes and prevention. Some of all these elements are equally regarded as the core of TQM elements in this study. The limitations from the previous studies on TQM and sustainable performance extensively motivate the purpose of this study.

2.4.1 Total Quality Management (TQM) Definition

The definitions of TQM differ based on different approaches. TQM is defined in different ways and manners; thus, no single definition can capture the outright concepts of TQM as many authors have numerous perceptions about TQM which influence the way they define it (Eriksson & Hansson, 2003). According to Agus and Hassan (2011), TQM provides set of practices that encompasses meeting requirement of the customers, continuous improvement, constant result measurement, increased employee teamwork and involvement, team-based problem solving, competitive benchmarking, good intimacy with supplier, long-ranged thinking and work reduction.

Baird et al. (2011) stated that, TQM as a philosophy is an integrative and wide concept that is designed to continuously improve the product quality, services and processes in order to achieve customer satisfaction. The importance of customer-related issues is emphasized by TQM as a measure to quality (Basu, 2014). Also, TQM can be defined as a continual technique or method used in satisfying the customer's demands and maintaining the continuous improvement (Bon & Mustafa, 2013). Casas (2011) explained that TQM encompasses the implementation and understanding of quality management

concepts and principles in every parts of business activity. The study opined that TQM requires quality management principles to be applied at every unit, department and stage of the organization.

According to Casas (2011), TQM is a vision which can be achieved only by a firm through a long-term planning by implementing and scheduling the quality plans annually that result to the firm to actualize their objectives. Also, TQM is a supply-chain-wide quality commitment from the producer to the supplier and finally to the consumer of the company in order to achieve enough productivity, service management and excellence (Christofi et al., 2008).Furthermore, TQM is a philosophy and a systematic process of management culture that promotes the satisfaction, needs and expectations of customer's values. Also, Corredor and Goni (2011) added that TQM advocates for a universal application for organizational activities which makes it almost prescriptive in orientation. TQM in other word is a set of disciplines and managerial process that are in coordination to ensure that the organization exceeds and meets customer's requirement consistently (Töremen *et al*., 2009).

TQM is a continuous effort to preferably exceed and fulfill the customer expectations and needs by continuous improvement labour and work at the lowest cost to all those which diligently involved, committed by focusing on the organizational process (Izvercian et al., 2014; Isaksson, 2006). TQM is a holistic philosophical management which encourages organizational continuous improvement (Kahreh et al., 2014). In addition, it is a philosophy that covers the need to satisfy the customer's internal and external needs and expectation and the importance of taking the right step at the right time (Al-khalifa & Aspinwall, 2000).

Laxmikumari et al. (2014) posited that, TQM is a participative, structured and comprehensive approach to implementing and planning a constant improvement process in organization in order to upgrade the product and service quality through continuous refinement in response to feedback. Within the education context, literatures like Sallis, (2002); Militaru, Ungureanu, and Creţu (2013) explained that TQM is a holistic approach out of which 7 elements which are rewards, resources, vision, philosophy, organization and strategy should not be left out; each element should be seen as an indispensable tool in order to avoid jeopardy. Mohammed, Tibek and Endot (2013) mentioned that TQM is the evaluation of individual expectation, needs and requirements and organizational coherence through continuous development work as the organizational level in entirety.

Whereas Naghshbandi et al. (2012) defined TQM from different perspective as a strategy to hold management method and competitive superiority in order to improve efficiency and productivity that will lead to utmost quality. The study emphasizes on the willingness of the military force staff and their assessment in Tehran for TQM approval. Perdomo-Ortiz, González-Benito, and Galende (2006) regarded TQM as multi-dimensional concept that acts beyond quality standards, procedures, techniques and tools for controlling quality and quality itself understood as a business outcome. TQM can be concluded to be an effective resource that can be adopted to pursue other types of competitive performance that quality and innovation (Prajogo & Sohal, 2006). Sharma, Lawrence, and Lowe (2010) mentioned TQM to be set of practices that follow management technique and concept that seek to integrate employees and managers in achieving continuous improvement performance.

One of the most important things mentioned from the several definitions given by the scholar in the field of TQM is continuous process improvement. Unarguably, if any organization can practice continuous improvement, such an organization can maintain the competitive advantage in performance, which eventually leads to sustainable performance. Summarily, the researcher concluded with the following definition of TQM in food and beverage companies' context which captures all the above stated definitions.

TQM is defined in this study as a managerial philosophy with systematic approach of managing quality purposely established in achieving high performances as regards customer and financial satisfaction and production achievement that needs commitments from the company leadership by adopting effective core quality factors in developing a productive and sustainable environment that expedites the continuous improvement for all agro-allied processes and activities.

2.4.2 The Elements of Total Quality Management (TQM)

Many past researches have tried to identify the core factors that constitute TQM philosophy (Adina-Petruta & Roxana, 2014; Gonzalez-Padron, Akdeniz & Calantone, 2014; Hua & Lee, 2014; Karapetrovic & Willborn, 2000; Walsh, Hughes & Maddox, 2002). According to Huang and Lin (2002), successful implementation of TQM are influenced by three key elements: employee involvement, continuous improvement and top management commitment. According to the study, TQM concept was created to diversify the organizational total effort which comprises the whole workforce focusing on continuous improvement for customer satisfaction. The elements are observed from three different points of views as follows: models of quality award, empirical studies and

contribution from quality gurus (Tari, 2005). In consonance with this approach, in this study, the core elements of TQM is identified.

According to Brah, Wong and Rao (2000), the critical factors of TQM implementation using the criteria, perceptions and experience of a range of total quality practitioners are top management support, customer focus, employee involvement, employee training, employee empowerment, supplier quality management, process improvement and service design. The study suggests that TQM is applicable to the service sector and its implementation is associated with better business performance. In another vein, Brah, Tee and Rao (2002) identified the internal factors critical to the successful implementation of TQM to be corporate planning, top management leadership, customer focus, human resource focus, process focus, quality focus and information and analysis. The study showed that effective execution of these seven constructs leads to improvement in the performance of an organization.

According to Isaksson (2006), the core commonest values of TQM are: leadership commitment, customer focus, focus on process, focus on fact, participation of everybody and continuous improvement. In addition, ISO standards in identifying the core elements of TQM generally focusses on ensuring that the organization can continuously deliver product and service, which can meet the expectation of the customers. According to ISO 9000 (2008), the eight quality management principles include process approach, beneficial supplier relationship, people's involvement, continuous improvement, precise approach to decision making , leadership, system approach to management and customer focus. These principles can always be employed as a guide to control an organization towards improved performance. Also, Ho (2010) mentioned that over the last century, the

Japanese formalized a technique called 5S practice which is the first step towards TQM. The 5-S represents: structurize, systematize, sanitize, standardize and self-discipline. Through the formalization of this technique, a framework which allowed a successfully convey of message, achieve total participation and systematic implementation of the practice was established.

According to Abdullah (2010) a research was conducted concerning TQM practice and sustainable performance with the performance criteria from employee development and training, quality measurement, top management commitment, process management, customer satisfaction and involvement and planning and strategy positive impact as a result on sustainable performance. Meanwhile, Fok, Fok and Hartman (2001) used the word TQM maturity in a qualitative sense as a construct developed from TQM implementations. The study stated that by examining three dimensions namely perceived influence of employee on quality issues, employees' understanding of specific TQM techniques and perceived use of TQM program, then TQM implementation can be measured.

Based on comprehensive review from TQM literatures both empirical and conceptual studies and models of quality award (Chen, 2013; Izvercian et al., 2014; Kahreh et al., 2014; Militaru et al., 2013; Rungtusanathan et al., 2003; Sun & Cheng, 2002; Toremen, Karakus & Yasan, 2009; Tran, Cahoon & Chen, 2011), the core elements of TQM are identified as follows:

2.4.2.1 Management Leadership

The issue of leadership has been repeatedly discussed in the area of organizational discourse. This is due to its importance for an organization to attain its objectives and goals. It is generally accepted that the primary goal of every organization is to achieve a set goal while the leaders of that particular organizations play a crucial role to the effectiveness of the organization (Osah, Osundina, Ayim & Nwokocha, 2014). The capability of the management to implement actions with collaborated efforts depends on the ability of the leadership (Obiwuru, Okwu, Akpa & Nwankwere, 2011). Thus, an active leader does give inspiration to the subordinate to possess the potential to improve efficiency and to meet the requirement in the cause of achieving the organizational aims (Lee & Chuang, 2011). Also, leadership is a process of encouraging followers to perform in their best forms in order to get the aimed results (Armstrong, 2012). Leadership includes securing the engagement of the followers, motivating people and communicating and developing a long sight vision.

In addition, Jaskyle (2004) mentioned that the perception of employees on leadership behavior is a critical predictor to employee retention, commitment and job satisfaction in the organization. Horner (1997) evaluated leadership management as a social impact on organizational settings; the impacts of which are related to the achievement of the organizational goals. In the same vein, leadership is all about achieving set goals, optimizing performance, and unleashing human potentials. Leadership in another word is defined as a system of establishing subordinate identification with the general objectives and producing the result to achieve the organizational goals. It comprises the enhancement of performance, vision and potential of employees beyond normal limitation. The dullest

and the weakest set of people can be changed into the most effective workforce through appropriate leadership.

In the late 1980s and early 1990s during the advent of the scientific fields of leadership with an increase in elaboration and publication of leadership, the charismatic leadership has become a topic of great interest (Conger & Hunt, 1999). The idea originated from "charisma", a Greek word which implies "divinely inspired gift" (Zaccaro, 2004). The charismatic leadership style has its influence mainly from the leader personality. Charismatic leadership as argued by scholars is defined by special behavior that happens in three consecutive stages: The assessment of the environment is the first stage. From the assessment, the leader perceived the subordinate's needs and expressed their dissatisfaction for the status quo. The next phase is when the charismatic leader communicates and visualizes for the followers or employees effectively. The last stage is the vision implementation that requires the leader to act in an unconventional and risky way in order to secure commitment from the subordinates such as intentional exposure to situations of taking chances and uncertain outcomes (Ehrhart & Klein, 2001).

Leadership is a function ingrained in management. These two constructs are inextricably connected within a setting of an organization. Leadership is thus regarded as a feature of management that is not characterized by all managers. According to Enderle (1987), management is a practice that transforms a mob into a productive, effective and purposeful team. The rate at which a manager can have influence on members of the team to express the organizational goal and act in a desired manner is an indication of his leadership features. One of the roles of the management which are not carried out necessarily on a daily basis by all managers is leadership. Leadership role is performed

by managers in addition to their daily routines depending on the unit function whether they are upper, lower or middle level managers (Pavett & Lau, 1983). Leadership is a domain of those in a certain position of power in the academics such as heads of functions such as registry, Head of Department, Vice-chancellors, Deans and Professors.

According to Johari (2008), a leader must guide the workers in a way that allows an avenue to create an acceptable work behavior and attitude that will allow them to make positive impact to the organization's overall goal and the achievements of the group. The observation made by Oluyinka (2010) is further strengthened that researchers from organizations are always stressing the foundational roles that work behavior and attitude of personnel contribute to the acceptance, retention, image and well-being of the organization. The study stated further that the level of productivity of the organization can be reduced by the manifestation of negative behavioral attributes and propel the feeling to quit among the workers who feel nauseated by such work behavior and negative attitude of their and colleagues.

The leadership commitment starts with the agreement from the team members to follow the leader when a job is accepted. The transaction always involves the organization paying both the team members and the leader in return for their compliances and effort. The leader is conferred a power to discipline any team member if the work do not met an appropriate standard. Homrig (2001) created the concept of "transforming leadership" and "transactional leadership". The transactional leadership assumes that punishment and reward are the main factors to ensure work performance of employee management through a visible chain of command. The features of a transaction leadership are clear policies and structures where subordinates are briefed on the work contingent rewards and

expectations. The outcomes of non-performance and no-compliance with the policies of an organization are clear also to subordinate. Similarly, transactional leadership is a contractual relationship where the subordinate or the employees exchange their liberty and time for salary and other benefit. Transactional leaders assign tasks for subordinates with these contracts and expect quick delivery of results. This type of leadership is primarily concerned with successful completion of task as a contract and not the amount of effort of technical know-how.

Therefore, the effectiveness in allocation, enhancement, utilization and resources mobilization to achieve sustainable performance depends on the management leadership and their style among other determinants (Obiwuru et al., 2011). The leaders in hyper-turbulent business environment of today strive to implement and design a variety of projects, teams and process-based tasks (Polychronious, 2009). The study reiterates that the leaders has to give the followers what is required to sustain them on the task and make them realize the vision of the organization and make them productive. Over the time, this concept slipped away from the organization therefore causing challenges to the retention and performance of employees and the total achievement of the organization's objectives.

According to Ng'ethe et al. (2012), the roles of management supervision and leadership are crucial in the retention of employee as it is considered that the employees leave the managers but not the organization in the business set-up. Belonio (2012) stated that, the leadership style that defines the relationship between the leaders and the followers is the most important in terms of productivity, efficiency and retention of the employees in the organization. Organizations are considered to be competitive in this modern era of globalization on the basis of the human resources competence. It is therefore a challenging

task to handle people who are culturally, psychologically, ethnically and physically differed from each other (Bushra et al., 2011). Thus, Albion and Gagliardi (2007) state that, the leadership quality employed by organization, determines the employee retention and management in an organization.

Northhouse (2013) mentioned that an inappropriate or ineffective leadership can have effect on the retention and performance of the employees directly in a contemporary organization. Cole (2015) stated that an organization takes the issue of leadership to be crucial. This is confirmed from the fact that leadership significantly contributes to either the organizational failure or success (Jaskaram & Sri-Guru, 2014; Lok & Crawford, 2004). It is posited by Obiwuru et al. (2011) that leadership capability depends on the ability of the management to execute collaborated efforts. As an effective leader, the subordinates' potential is inspired to increase efficiency and meet the requirement during the course of attaining the goals of the organization (Lee & Chuang, 2011). The practitioners in industry recognized the important roles of the employees for long in the actualization of the organizational objectives. Therefore, the managers in the organization strive to develop, harness and utilize both material and human resources in order to achieve the organizational goals (Ushie, et al., 2010).

2.4.2.2 Benchmarking

Many researchers and scholars have reiterated that organizations need an effective benchmarking for achieving goals on the parts of the decision-makers of the organizations (Yang, et al., 2015; Voss, Ahlstron and Blackmon, 1997; Véras, et al., 2005; Veillard, et al., 2013; Shabunko, et al., 2014; Stewart, 2010; Saunders, Mann and Smith, 2007; Prado,

2001; Noel ,2014; Moriarty, 2011; Maheshwari and Janssen, 2014; Maheshwari and Janssen, 2013; Brun, 2011; Magd, 2008; Luu , Kim and Huynh, 2008).

According to Casas (2011), benchmarking is regarded as a continuous process to measure the procedures, products and services in an attempt to compare with the biggest competitors and leaders in a given industry. The motive is to procure necessary data for an organization to be rated the best among the best. In furtherance, benchmarking is in different forms of some key themes such as comparison, measurement and best improvement identification, practice and implementation (Anand & Kodali, 2008). The study added that the search for the best industry in terms of product and service will eventually lead to exceptional performances through adequate implementation of the best practices.

Chan (2012) examined benchmarking of energy to support low-carbon hotels considering the problems, approaches and development in China. This study showed both the major and minor stream of energy benchmarking in the hotel. The study stated that, the balanced energy use intensity (EUI) based on the floor level is the most popular method in the benchmarking. The establishments of indicators of EUI from the past work using regression techniques, data envelop analysis (DEA) and subsystem averages are studied. An in-depth conversation with the system and hotel engineers and professors to identify the problem faced was conducted by their present hotel energy benchmarking. It is concluded that, the coordination of different stakeholders and implementation of proposed plans, tourism bureau, energy improvement office and the local construction ministry can achieve this conceptual benchmarking in China's hotel.

Similarly, Colicchia, Melacini and Perotti (2011) examined benchmarking in supply chain sustainability through the current strategies by the companies in the supply chain sustainable area and figure out which stage of supply chain is at fore-front in the application of the initiative for sustainable supply chain. A three-pronged methodology was implemented through the development of a model to identify the steps towards supply chain sustainability. Second, the implementation of the framework to multinational companies through examination of environmental report and lastly, a deep investigation of three organizations in order to provide additional idea on the outcomes. It was concluded that, the companies will gain from the whole chain of supply, starting from adopting the examined sustainable initiatives rather than focusing on product families.

Benchmarking for improvement of quality within a network environment is not the new phenomenon (Saunders, Mann & Smith, 2007). The study described how managers from organizational networks operate or formed on a benchmarking project as a team to work on in terms of benchmarking strategy deployment practices. Data were gathered from managers being the respondents from seven diverse organizations in New Zealand as a case study with the responsibility for strategy deployment. This study provides an instance of how networking benchmarking is managed. It was revealed that the issue of strategy deployment is the same and managers are capable of experience and ideas sharing effectively despite the diversity in culture, size and sectors.

Furthermore, Fuller (2000) analyzed a model benchmarking continuous process improvement through the use of benefit curves. The model was created and utilized by five health and safety scenarios where the model was tested against the philosophy of continuous improvement and benchmarking in reference to performance improvement,

reduction in costs and minimizing change in organization and assessing performance through environmental work. It was concluded in the study that short-term solutions are provided through benchmarking to some issues by identifying how the same issues are addressed by the companies. The main benefit of benchmarking is to improve the business culture in the short or long run.

Furthermore, an approach to benchmarking is presented by Gonzalez-Padron, Akdeniz and Calantone (2014) in dealership of sales-staffing efficiency by using extended data envelop analysis. By applying a series of basic and extended data development analysis models on the data obtained from statistical and self-reported financial information, the efficiency of the dealer was analyzed in this study and comparison was made on the efficiency scores to financial and traditional benchmarking. The results obtained from DEA models revealed that producers obtained detail information on allocating sales staff to maximize the dealers' efficiency and generate complementary methods to financial traditional ration benchmarking to evaluate the best practices to other dealers.

In brief, benchmarking is conceptualized in terms of marketing, liquidity control, employee productivity, inventory control, capability isolation and identification, sales control, capital investment, rent utilization and cost control that contribute to organizational sustainable performance (Hua & Lee, 2014). Lia, Huang and Wang (2011) stated that benchmarking is the combination of knowledge-based system (KBS), benchmarking tool and DEA technique as a TQM tool for decision making and process improvement.

2.4.2.3 Continuous Process Improvement

In literature, Continuous Process Improvement is one of the most discussed TQM elements (Intra & Zahn, 2014; Irani, Beskese & Love, 2004; Jonsdottir, Ingason & Jonasson, 2014; Frances, Boer, & Gertsen, 2003). According to Krittanathip et al. (2013), Continuous improvement has been tested to be a powerful tool in an organization. Also, from all the elements of TQM, most are structured around continuous improvement as one philosophy in order to enhance better performance of an organization (Suárez-Barraza, Ramis-Pujol, & Llabrés, 2009).

According to Adina-Petruta and Roxana (2014), performance, competitiveness and innovation are the aims of current business organization under given circumstances such as: continuous and quality improvement. The study focused on examining six-sigma and quality management for continuous development improvement of higher institution. The findings show that by measuring the quality of results and processes of educational products and services and research, continuous improvement can be achieved. Additionally, it is believed that for effective manifestation of continuous improvement, teamwork must be maintained (Atkinson, 1994).

Christofi, Sisaye and Bodnar (2008) stated that continuous process improvement is one of the three main principle dimensions of TQM after total involvement, universal responsibility and customer focus by proponents of quality movement. Ellis and Castle (2010) evaluated a parallel relationship between teaching and continuous process improvement by outlining the process, sub-process and underlying characteristics followed by the teacher researchers. The study revealed that a defensible analytical case

has been built where teacher research is conducted and the students' education and teacher's practice are undergoing continuous process improvement.

In other words, Intra and Zahn (2014) opined that a holistic continuous process improvement must be given in today's business environment for enterprises to successfully implement Lean Production System (LPS). In this research paper, the state of the art for continuous improvement process concepts is described. It is therefore concluded that continuous improvement process is a very helpful brick for a sustainable vitalization and evolution of the LPS. Jung and Wang (2006) explicitly studied the connection between continuous process improvement and TQM of international project management. A cross sectional survey was obtained from 100 middle managers to international managers at senior level to make hypothesis validation of the study. The study revealed that the association between continuous improvement of international project management (CIIPM) and TQM elements is significant more than the relationship between CIIPM and TQM hard elements.

Continuous improvement has been an encouragement point that necessitated competitiveness worldwide from the perspective of the three renowned quality scholars: Crosby (1979); Juran (1988) and Deming (1986); this is differentiated by quick transformation in customer demands and technological advancement for higher ground of value. In the same way, Jonsdottir, Ingason and Jonasson (2004) examined continuous improvement projects in certified organizations based in Iceland. The study stated that more importance is placed on systematic approach to projects and continuous improvement by benchmarking organizations. The literature therefore analyzed how

certified organization by studying what kind of process is in place support continuous improvement.

In summary, continuous process improvement is conceptualized by looking for improvements continuously in the manufacturing process, continuous review of issues related to sustainable performance, standardized documentation of quality assurance, systematic improvement method for organizational process, effective feedback and continuous evaluation of quality-related strategy (Barber, Eduardo & Keane, 2006; Krittanathip, et al., 2013; Suarez-Barraza, Ramis-Pujol & Llabres , 2009; Walsh , Hughes & Maddox, 2002; Mandal, 2012).

2.4.2.4 Service Design

It is great to mention that TQM strategy has originated from the manufacturing sector and has later been growing in service organizations as well (Sila & Ebrahimpour, 2005). Lakhe and Mohanty (1995) pointed out that service organizations have so many characteristics. Service organizations produce intangible product and services that are directly delivered to the customers. Therefore, they should be ready to deliver the service on time to satisfy their customers. While reviewing the literature on service design, there are two schools of thought (Camison, 1988). The first focuses on service delivery. Parasuraman, Zeithaml and Berry (1985; 1988) led this school. The other school focuses on the content of services through technical differentiating from function. This school is led by Gronroos and Gummesson (1988).

Before going further in TQM definitions from the existing literature, some definitions about quality either in product or service will be discussed according to quality

management literatures. One of the most competitive priorities and important strategies for an organizational development is quality (Sharma & Kodali, 2008). Additionally, it is revealed that on international competition, an organization needs to implement several quality methodologies and startegies in quality assurance form, quality management and quality control and system. This means that an organization should implement total quality concept. Therefore, TQM philosophy will increase commitment to quality, and if it is applied correctly, will enhance performance and lead to an organization's competitive advantage (Sharma & Kodali, 2008).

Moreover, quality is more than expecting or providing the client the required delivery or attainment of the client requirement, but it is also a completion of work more than the expectation of the client (Lyons, Acsente & Weasberghe, 2008). In other word, quality has turned out to be the most relevant factor in achieving competitive advantages while quality management is a rebirth in an organization management by concentrating on excellence (Ionica & Beleanu, 2010). In addition, movement of quality has gone through many transformations, inspection to prevention and quality control mode.

In relation to that, Adam et al. (1997) argued that, improving the quality of product and service in organizations is a fundamental to business success. Furthermore, Reichheld and Sasser (1990) pointed out that quality is the most way to run a business and earn profit. Similarly, Pakdil (2010) pointed out that organization can be successful by producing high-quality goods and services to increase sustainable performance, not just only by increasing quantities, but by efficiency, quality, and high level advantage among other organization in the market. She added that TQM is one of these management strategies to achieve these goals.

In accordance to this view, Thiagaragan et al. (2001) reported that the emergence of quality to be a top priority strategic management in many organizations is due to global competition pressure to satisfy customers' demands who want to have better goods and services. In addition to that, Deming (1986) mentioned that one important thing about quality management is that it establishes mutual supportive relationships with suppliers and customers. Quality is also defined as “fitness to use” to customer needs, expectation and satisfaction (Deming, 1986; Feigenbaum, 1986; Juran, 1988).

2.4.2.5 Human Resources Management

According to Talib, Ali and Idris (2013), the human resources management has a great outcome effect on quality. This shows that in the success of TQM, people are considered to be key factor. Additionally, Yoo et al. (2006) stated that external and internal quality results can be improved through employee empowerment. Also Vouzas et al. (2007) reported that employee involvement is one of the dimensions of Human Resources Management. Employee involvement is the employee participation in all levels organizational activities which is the key factor to successful TQM implementation for the sake of solving problems and increasing the flow of knowledge and information.

The direct involvement of employees in quality management system, visions, and goals will differently lead to success of TQM programs (Motwani, 2001). The idea and reason behind involving employees in the quality system is that the innovative concept originate from the one who is doing the actual job, i.e. employee (Thiagarajan & Zairi, 1997). Several authors confirm the positive effect of employee involvement on the TQM implementation process (David & Bishnu, 2009; Enrique, Tari & Molina, 2002; Faisal et al., 2011; Oakland & Tanner, 2007; Thiagarajan, Zairi & Dale, 2001).

Another important factor that falls under HRM is employee empowerment. It refers to the autonomy and authority that is given to employees working in different levels inside an organization. This empowerment gives employees self-improvement, sense of workmanship, innovative ideas and self-inspection (Thiagarajan & Zairi, 1997). The importance of employee empowerment has been assured by many researchers (Bhat & Rajashekhar, 2009; David & Bishnu, 2009; Thiagarajan & Zairi, 1997). The most important factor that is more focused on by researcher is training. Employees' training and education are considered vital investments for the success of TQM (Baidoun, 2003). Educated and training employee is an organizational asset. Knowledge and ability of practicing TQM is a must through continuous training. Training as a CSF for TQM is suggested by many scholars (Faisal et al., 2011; Vouzas et al., 2007).

2.4.2.6 Quality Assurance

This element of TQM involves the concept of assessment and systematic procedures used to ensuring achievement of quality improvement and outputs (Lewis et al., 2006). Quality assurance based on clarification and comprehensive review incorporates three sequential non-linear stages namely: planning and design, prototype, analysis and production, and post-production and delivery (Abdous, 2009).

To start with, Alkafaji (2007) examined review program of quality assurance of auditing firms from international perspectives. The purpose of the study is to make comparison and contrast the quality assurance review program globally in order to know the differences and similarities between the programs. A survey for information request was forwarded to the accounting regulatory bodies that belong to the International Federations of Accountants (IFAC). The result was consequently evaluated to identify differences and

similarities in the implementation and design of the programs. The result showed that countries with a significant number of markets have the tendency to ask accounting firms for quality assurance programs while countries with less significant stock markets do not have the tendency to ask for such program.

Toremen, Karaku, and Yasan (2009) posited that the importance of quality in TQM is reflected in both the team and individual through some developmental methods which stand for an approach to quality assurance to be more accordant with fundamental ethics and structure of educational organizations than many with mechanistic and hierarchical processes. Procedures for quality assurance on goods and services have changed perpetually in accordance with technological and socio-cultural change that has marked the rapid revolution of the society (Catalin, Bogdan & Dimitrie, 2014). Tran, Cahoon and Chen (2011) explained that, quality assurance was derived from ISO and TQM practices; hence, the practice enables the occurrence of quality management during the new product development process and focused on continuous improvement as a key quality management practice.

Cheng (2003) explained quality assurance on how it is related to future, internal and interface education. It is reported that under quality assurance, there are three different paradigms in education. The internal quality assurance is the first wave paradigm that improves the environment and the internal process such as teaching and learning effectiveness can be achieved to ensure planned objectives; while the interface quality assurance which is the second wave paradigm ensures the needs of the stakeholders as satisfied by education services and are reckonable to the public accessibility.

Lastly, the third wave paradigm, future quality assurance which emphasizes on how to ensure relevance of practices, outcomes, aims and contents of education in this modern era of knowledge-driven economy, globalization and information technology to the future of new generation. The study concludes that a new comprehensive framework is provided by quality assurance and total quality conception in form of interface quality and future quality for policy makers, researchers and educators to pursue quality education in this century in different parts of the world.

In another vein, Lim (2008) conducted a case study research across the country on understanding quality assurance. The objective of the study is to outline the dynamism in policy implementation of quality assurance across and within the institutions for an offshore degree. Interviews were conducted and data were obtained from a school of business in private university of Malaysia which is the main exporter of degree in higher education and its offshore business partners. The study revealed that for quality assurance to be effective, the university relies on its effectiveness by implementing the policy of the university.

In control quality process assurance, there are seven basic quality tools identified as appropriate for use (McClintock, 2016). They are also known as Ishikawa's seven basic tools of quality or 7QC tools: flowcharting, cause and effect diagrams and Pareto diagrams, histograms, scatter diagram, control charts and check sheets. Mishra (2007) applied the idea of cause-and-effect also known as fishbone to study quality assurance in higher education context. It is a tool for open thinking and analysis in solving problems.

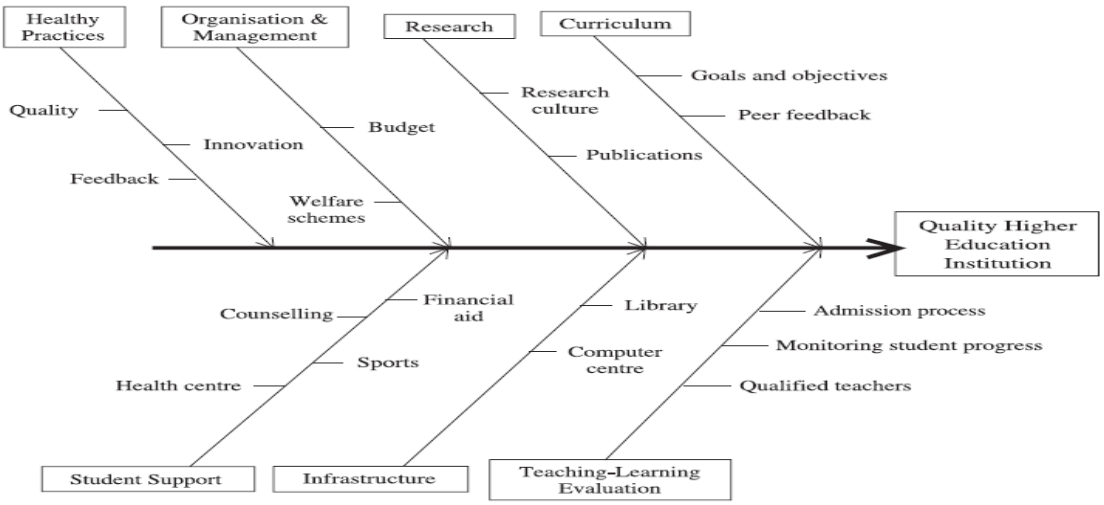

Figure 2.1
Example of Fish-bone Diagram
Source: Mishra (2007)

During and after a brainstorming session, it is useful in organizing ideas. From the representation in the below diagram, the effect is located at the right end of a broad arrow. On the either side of the effect line, major causes are recorded. Minor causes are aligned with the respective major causes as clusters as presented in Figure 2.1. This approach is widely used in quality management plan and control quality processes.

Elassy (2015) reported that quality assurance is divided into two: "retrospective" QA and "prospective" QA. The "prospective" QA is concerned with improvement themes while the "retrospective" QA focuses on accountability theme more than the enhancement theme. The retrospective QA makes a summative judgment against external standards by looking back at what has already been done. In addition, Harvey (2011) defined QA as "a process of establishing stakeholder confidence that provision (input, process and outcomes) fulfils expectations or measures up to threshold minimum requirements". It is concluded that QA is considered as a continuum as it focuses on assessing the quality

more in order to determine the strengths and limitations of performance and it is understood to be a diagnostic process in a business. QA also entails quality improvement as curing the limitation processes that can be found when the quality is assured and develop the strengths at the same time if there is any (Elassy, 2013).

In a few words, quality assurance is conceptualized in terms of systematic approach, a set of quality management practices that involves primarily on creating organizational standards and procedures for quality (Cukier et al., 2012); an activity that provides the evidence that is needed to find confidence that the quality function is properly being performed to all concerned (Karapetrovic & Willborn, 2000 ; Lau & Tang, 2009; Law, 2010; Timothy, 2008; Mergenthaler, Weinberger & Qaim, 2009; Moldovan, 2012; Moore, *et al*., 2007; Seip, Frich, & Hoff, 2012; Manorama & Jeevan, 2009).

2.4.2.7 Information and Analysis

It is evidenced that information and analysis strengthens the connection between quality management practice and sustainable performance. Melville and Whisnant (2012) mentioned that, information and analysis like the system of environmental enterprise resources planning (EERP) have been opined as a tool for environmental implementations of sustainable practices. In this manner, software has been developed from companies like Microsoft in order to support the application of such practices. However, the function of information and analysis in the application of environmental practices in firms has little understanding insofar. Information and analysis promotes the effect on environmental performance through the environmental practices; that is there is a positive relationship between information and analysis and environmental practices. Thus, information and

analysis is considered to support sustainable performance and allow the coordination of operations with other functional factors like environment.

There are empirical evidences that manufacturing companies with a high degree of information and analysis exhibit higher environmental efficiency. Information and analysis helps in driving the transformative agenda towards a resource light and low-carbon economy (EU – SUST, 2011). Jenkin et al. (2011) stated that the contribution of information and analysis are carried out in two research streams in the literature with the objective to minimize the amount of waste consumption and energy throughout the lifecycle. The second stream focused on the indirect impact of information and analysis on environmental sustainable performance by improving the activities of supply chain like the inventory management, transportation and manufacturing. Information and analysis experts affirm its importance for firms' improvement in environmental performances on how it reshapes the operational activities. However, past studies have rarely considered the association between environmental practice, information and analysis and environmental performance.

In addition, in information and analysis, it is argued that information and analysis enhances sustainable environment through eco-efficiency of energy and through enforcing change in the action and behavior of the organizational workers with regards to the environmental sustainability of the firm (Jenkin et al., 2011). In other word, information and analysis leads to improvement in energy eco-efficiency as it captures, integrates and systematizes meta-data and data (geographical location and temperature) that enable the firm to maximize transport routing and energy management in its facilities (Chen et al., 2008; Erdmann et al., 2004; Melville, 2010). Also, information and analysis

enhances transformation in the behavior of the actors by feasible indicators that encourage organization to have commitment to provide sustainability and information on footprint of the environment to the employees (Bengtsson & Agerfalk, 2011; Jenkin et al., 2011).

In other vein, it is argued on the impact of environmental practice on environmental performances of firm that the interaction with supply chain workers minimizes the total effect of the firms on the surroundings (Klassen & Vachon, 2003). Environmental strategies when they are integrated with information and analysis are likely to bring more success (Handfield et al., 1997). Information sharing, collaborative activities and integration of different processes are required to improve the performances of technologies, environmental projects and strategies. Therefore, it is reasonable to expect that information and analysis are supporting integration of different processes; information sharing and collaboration activities may have impact on environmental performances.

Khanam, Siddiqui and Talib (2016) reported the relationship between TQM and information technology and its impact on organizational performance. The objective of Total Quality Management in the information system design is to assure the quality of information. This is done by ensuring, verifying and maintaining software integrity through an appropriate methodology. It institutes appropriate procedures with checks and controls in all the processes of information systems development.

2.4.3 Total Quality Management and ISO Standards

Since early 1990s, the incorporation and application of TQM and ISO 9000 together has been a controversial debate between practitioners and academics (Munro-Faure &

Malcolm, 1992). Globally, the concept of incorporating these two practices is a point of attraction for scholars of quality and operations management. Youssef and Youssef (2018) examined the effect of jointly incorporating TQM and ISO 9000 on operational performances of manufacturing organizations and their pursuit to achieve status of world-class manufacturers. The study showed that firms that incorporate TQM and ISO 9000 together progress faster to achieve work clearance management (WCM) status and have more effective operational performance in terms of competitiveness, inventory management, quality management and time-based performance. There is uniqueness in the unprecedented ways on the joint effect of TQM and ISO 9000 on operational performance.

In accordance with the standards of ISO 9000, quality management is argued to be basic foundation for other quality techniques under TQM (Mo & Chan, 1997). A significant number of variables under the standards of ISO 9000 are in line with TQM. Also, TQM process certainly comprises ISO 9000 (Ho, 1997). Ho (1997) conducted an international survey in 80 countries and revealed that the number of certificates of ISO 9000 in 1996 which were 160,000 is more than the number in 1994 which was 70, 517. Garver and Lucore (1994) stated that in the future, it is believed that ISO will be a necessity need by many business firms. However, ISO 9000 is strongly criticized by other researchers. The control of product quality is not focused on by the ISO 9000 (Reedy, 1994). For more than 25 years, the rules of quality assurance founded in ISO 9000 have been implemented in USA with no or little improvement if any in safety and quality.

Reedy (1994) also added that without proper implementation, ISO 9000 does not offer any help. In the same view, many people in the industry believe that, ISO 9000 is not the

path to quality and competitiveness as its supporters claim (Sun, 2000). According to Taylor (1995), few companies considered registration of ISO 9000 as part of the plan of TQM. The origin of ISO certification is Europe; the firms in Europe however have no idea whether these programmes are promoting quality infusion into the organizational system or not (Stratton, 1994).

Tomic and Spasojevic Brkic (2019) reported the impact of the requirements of ISO 9001 quality improvement in ISO 9001:2008 i.e. the preventive and corrective actions on customer satisfaction. The study suggests that it can be valuable for both the organizations and the certification bodies that are keen to improve customer satisfaction through implementation of ISO 9001 in the context of multinational supply chain such as the transportation and aerospace sector. However, Lakhal (2014) mentioned that on the relationship between TQM and ISO 9000 certification, there is no mutual consensus among the research community. ISO 9000 certification is suggested by some researchers to be firstly applied in order to create favourable environment for implementation of TQM while on the other hand is believed a good starting point is provided by TQM for ISO 9000 certification. This finding showed that first implementation of ISO 9000 before starting TQM leads to more effective organizational performance; however, organizational performance is affected by both TQM practices and ISO 9000 certification.

In the same vein, Fonseca (2015) reviewed many paths of quality such as the approaches of TQM and Quality Gurus approaches, ISO 9000 international standards and models of business excellence, concluding with a consideration and analysis of the expected results from the revision process of ISO 9001:2015. The revision is a move towards TQM and reflects the increasing change in demand, dynamic and complexity of the environment

while compelling organizations to provide product and service that are in conformity with the customer satisfaction. The main benefit that is expected in less emphasis on the reinforced or new approaches and documentation: considering knowledge management, risk-based thinking, relevant stakeholders and organizational context.

Yet, ISO 9000 certification is referred to as series of quality management standard system. The ISO 9001 as the core module provides quality systems for services, development, production, design and installation. The model is regarded to be comprehensive for quality systems. Nevertheless, this study focuses only on TQM practices as quality management is argued to be basic foundation for other quality techniques or tools as ISO and significant number of variables under the standards of ISO 9000 are in line with TQM. Also, ISO 9000 is strongly criticized by other researchers. The control of product quality is not focused on by the ISO 9000. In addition, for more than 25 years with no or little improvement if any in safety and quality, the rules of quality assurance founded in ISO 9000 have been implemented in USA. Finally, many people in the industry believe that, ISO 9000 is not the path to quality and competitiveness as its supporters claim and only few companies considered registration of ISO 9000 as part of the plan of TQM.

2.4.3.1 ISO 9001 and Food and Beverage Companies

The ISO 9001 is international standards for quality management systems (QMS) which gives support for companies in an effort to promote their managerial practice (Wilcock & Boys, 2017). The standard is anticipated that its adoption will enhance an increase in profitability and efficiency of the firm through incorporation of elements like customer satisfaction, process management, continuous improvement and leadership. In any industry of any country, this standard is developed to fit the system of the organization.

The efficient use of human resources, raw material and equipment are encouraged by ISO 9001. ISO 9001 standard is capable of benefiting the firms in developing countries as these resources are often limited in supplies in those countries. In furtherance, in both international and domestic markets, the standards have the ability to provide certified companies an open marketing. These standards have made it possible for companies from developing and developed nation to compete in international market by providing principles to guide the process of the company (International Organization for Standardization, 2011). Sampaio et al. (2009) reviewed the literatures that explored the external and internal benefit of ISO 9000 certification which includes improvements to market share, customer loyalty and confidence, product quality, on-time deliveries, sales, planning, supplier relationship, corporate image, decreased lead times and non-conformances and process performance.

According to Gotzamani (2005), guidelines are provided by ISO 9001 to support the organization in meeting the expectation and requirement of the customers, sufficiently manage the activities and resources and mutual promotion of beneficial relationship between firms and their suppliers. The use of information is encouraged by the standard to support efficient decision-making in order to complete these tasks. In developed countries, certifications from ISO 9000 have contributed impressively to an array of benefits.

2.4.3.2 ISO 9001 Adoption by Firms

According to Ochieng, Muturi & Njihia (2015), in developing and developed countries, most firms have embraced some form of ISO certification. Although ISO is not a certifying body, it provides standard against which assessment can be made on systems

and processes by organizations. With this, organizations have objective assessment modes and a means through which they can globally benchmark themselves to other competitors and see where they stand to other similar organization in comparison.

In 187 countries, more than one million organizations have implemented ISO 9001 standard and a significant number of these organizations have the aim to achieve quality and innovation (Manders, Vries & Blind, 2016). The study further reported that, the relationship between ISO 9001 and incremental and radical product and quality innovation performance is affected by the level of motivation of the company in implementing ISO standards, the region and the sector in which the operations of the company take place, the company's size, the standard version (1987, 1994/2000, 2008/2015), the rate of signaling and the level of the adoption of the standards.

A potentially very important resource is offered by the ISO 9001 standard for developing firms and their firms. The certification obtained from ISO 9001 can convince a potential or foreign customer that a company has internal procedure to serve as a reliable supply chain partner and for those with the capacity and an interest to export. Market and trade access has been offered as demonstrated by the ISO 9001 certification and to maximize the values of the sales of export (Henson & Masakure, 2009; Potoski & Prakash, 2009).

According to Hudson and Jones (2003), firms in developing countries faced the stigma that they produce low quality products than developed countries. Although, this narration might not be true, the conception is an additional challenge that may reduce the capacity to export sales. Due to the perceived marketing values, firms in developing countries might have ISO certification while the implementation may also be relatively expensive

and difficult. This standard is always misunderstood as quality certification of the product of the company, yet this standard certifies the quality management practices of an organization only. Hudson and Jones (2003) stated that the ways the products are perceived from the developing countries can be improved by the standard's certification and in doing so; it may increase the demand which can lead to increase in improved economies and job opportunities. The adoption of ISO 9001 is summarized in the Figure 2.2 across aggregated low, medium and high income countries. In both low and middle-income countries, the number of new annual certification to the ISO 9000 standards continues to increase while it is leveling up in high income countries. In the region of the Far East, this is particularly true as the number of certified firms since the middle of the 1990s has steadily been growing. Recently, ISO reported that the middle and lower-income European countries also have been employing and following these standards increasingly.

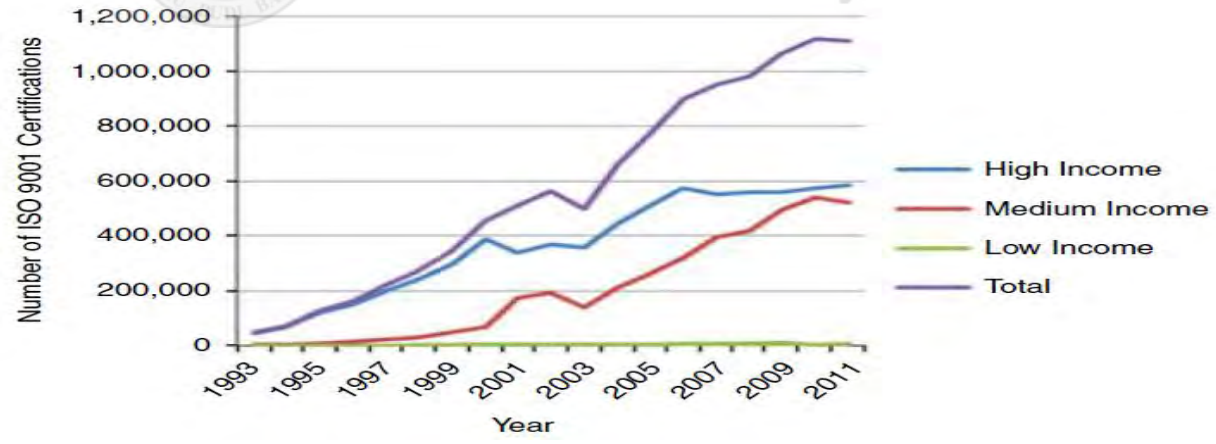

Figure 2.2
ISO 9001 Certification by Country-income Classification from 1993 to 2011
Source: International Organization for Standardization, 2013

2.4.3.3 ISO 14001 Adoption in Malaysian Food and Beverage Industry

One of the major root cause of environmental degradation globally is food production and consumption (Salim et al., 2018). Through adoption of environmental management system (EMS), environmental impacts in food and beverage sector can be addressed. According to Papargyropoulou et al. (2014), the impacts include land, water and air pollution from escalating from food processing and greenhouse gas (GHG) emission from food supply chain, decomposition of organic waste, irreversible land use change for crop cultivation. Padfield et al. (2012) posited that more seasonal and varied food products are increasing in demand by food consumers. Also, Papargyropoulou et al. (2016) mentioned that it is a general practice for edible food waste to be disposed of to landfill despite the growing interest in the waste minimization initiatives of food. In landfill, methane is produced by the anaerobic digestion of food waste that is 28 times more hazardous than carbon dioxide. Expectedly, the emission from GHG of food production and consumption continues to increase due to skyrocketed growth of human population (Searchinger et al., 2013).

In furtherance, Jones et al. (2012) stated that the ISO is the most well-known standard for EMS. Nishitani (2010), the ISO developed the standards in 1996 and the adopters are mandated to establish environmental planning, policy, checking and implementation as well as management review and corrective actions. Adoption of ISO 14001 certification is beneficial in terms of improvement in both environmental and organizational performance. In the international trade of F&B products, the standard has become more prevalent especially as a way to gain access to environmentally conscious market such as USA, Japan and Europe (Nishitani, 2010).

Approximately, the products of food and beverage share 10% of manufacturing outputs in Malaysia making it a special case study for research (AHK Malaysia, 2012). In Malaysia, food waste has become a major challenge where food waste makes up to 45% largest proportion of the total generation of solid waste (NSWMD, 2013). Papargypoulou et al. (2014) reported that in both the production and consumption side, a significant amount of food waste is generated like in the case of many countries in Global South. Manzo and Padfield (2016) stated that the situation is likely to change in Malaysia following the ambitious commitment of the Prime Minister to alleviate the environmental footprint of the country at the 2009 Climate Summit in Copenhagen. The EMS standard is implemented by few companies in the food and beverage sector despite the status of Malaysia as one of the largest GHG emitters in Southeast Asia where it accounts for 6% only of the total adoptions of ISO 14001 in Malaysia (ISO, 2016).

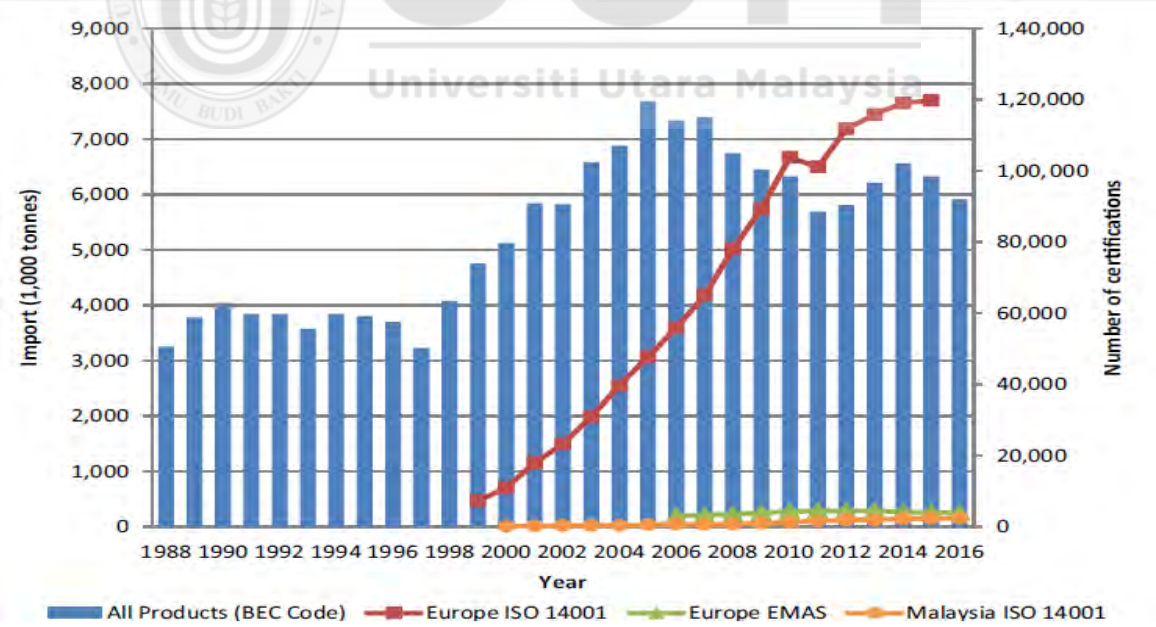

Figure 2.3
Europe Imports from Malaysia and the Number of EMS Scheme Adoption in Malaysia and Europe Source: European Commission, ISO, 2016

In the Malaysian F&B sector, identifying the barriers, appropriate incentives and drivers is an important step to formulate a systematic plan for EMS adoption which in turn improve the inclusivity and competitiveness of the products of Malaysian F&B in global food sector. Apparently, the Figure 2.3 from the food and beverage import by Europe from Malaysia has experienced a steep decline with an increase in the number of ISO 14001 certifications in Europe while the number of ISO 14001 and growth rate in Malaysia is still poorly represented. After 2000, a downward trend was experienced by the total import from Malaysia by Europe. However, there is an upward trend in terms of Malaysia export value, in the past decade, the ratio of export over GDP has declined indicating a decrease in the overall export in Malaysia.

If there is increase in the global demand towards green products, then there could be continuity in the removal of Malaysian F&B products from the European market. This issue has created a division between SMEs that have no capacity to get certified and multinational companies that can afford certification with ISO 14001 standards. If Malaysia continues with the same trend, it is argued that the country may experience economic loss either from the depletion of the natural capital or from the market loss – fuelled by climate change and unsustainable consumption. Pushing Malaysia towards a large-scale adoption of EMS standards will both prevent internal economic and environmental damages and boost the economy by attracting international companies seeking investment related to environmental performance (OECD, 2014).

2.5 Environmental Regulation and Policy (ERP)

The rate at which ERP is being properly abide to, is used to measure the environmental quality. It is a functional significance and feature of the regulatory socio-natural

relationships that depends on the capacity to reflect the optimum process of environmental safety (Chervinsky, 2014). Santos-Reyes and Lawlor-Wright (2001) mentioned that the necessity for instilling environmental policy on production process and product end-of-life is supported by customer concern for protections of environment. Focusing on environmental issues, Hak, Moldan and Dahl (2012) investigated the environmental sustainability index. This study showed that in terms of environmental pollution, there is no extensive research yet on environmental law and conversation. Also, the study showed that effective capacity for credible policies and enforcement, environmental information and accountability and transparency will promote a better environmental activity performance performed internationally by various institutions.

Leshinsky (2012) stated that the use of agreement plan to support environmental and sustainable preservations through a contextual model attract collaborative practice planning for agreement can be employed as an instrument to generally conserve environmental principles and values. The study explored a case study of municipality of Casey located in the state of Victoria and measures are introduced through agreement plans between the estate developers and the municipality in order to preserve the flora, fauna and green values located in the surroundings of the Royal Botanical Gardens in Cranbourne. The finding revealed that agreement plan might have established excellent practice and procedure to preserve the environment of the botanic gardens but the efficiency of the agreement plan as a tool for environmental preservation has limits like deficiency in resources for effective enforcement and distribution of information.

In another vein, Akanmu, Bahaudin and Jamaludin (2017) reported that ERP is used as an intervention to explain the practices of quality management in a better way. The results

show that ERP has a significant relationship with TQM and organisational performance. In addition, the results can increase the awareness in the food and beverages industry to follow rules and regulations which involve safety of human life, innovation and customer focus when implementing TQM. ERP as a practice in the food and beverages companies cannot only lead to higher performance, but also at the same time, can be a result of the desire from practicing other initiatives.

Chan, Dai and Lim (2016) reported that environmental issues are challenging; hence, the need to impose environmental regulation as in the case of China in 1980s. The environmental regulation is now rebranded by the Ministry of Environmental Protection (MEP) although it was initially set up by the State Environmental Protection Agency (SEPA). Industries can achieve good technical efficiency by responding to this regulation. In other words, Madu, Kuei and Winokur (1995) opined that many corporations are yet to realize the power and impacts of natural environmental quality planning on a product quality, growth and competitive advantage of a company in a market share. The study posited that after embarking on TQM policy, the next step for incorporation is the application of natural environmental quality planning programme. The study concludes that Japanese companies are gaining competitive advantages over the US companies by embarking on this marketing theory.

Environmental Quality Act 1974 in Malaysia defines environment to be a visible factor of the human environs which comprises sound, climate, water, land, atmosphere, and the social and biological factor of aesthetics. Environment is regarded as everything which encapsulates and having a direct effects on matter. Some factors which may be social, biological, artificial, psychological and natural affect the environment in which a man is

a constituent (Birnie, Patricia & Boyle, 1994). The one where the human effect is being kept under a certain limitation is the natural environment and can be known as economic or human survival activity depending on the type of the climate, natural resources and weather. In addition, the natural environment is regarded as all things presents at the earth surface like the animals, lands, water and plant as what can affect the human activity. Such example is the industrial development causing widespread pollution in our immediate environment (Perticas & Florea, 2016).

Some important environmental regulation and policies were passed by the Malaysian government in order to contain the environmental problem like the Environmental Quality Act and its Regulations in 1974 and 1989 respectively, the Federal Law, the National Parks Act, 1980, the International Environmental Laws, the Fisheries Act 1985, the Malay Customary Laws, the National Forestry, the principle of the English law, the protection of Wildlife Act and the Civil Law Act, 1972. To achieve development and sustainable performance in the country, some international and environmental policy has also been applied. Nevertheless, as a result of some challenges like weak or no enforcement, customary attitudes and non-coordination, these policies and laws have not been properly implemented (Mohammad, 2011).

2.5.1 Environmental Legislations in Malaysia

Historically, one of the richest countries in terms of environmental resources in the world is Malaysia for her high biodiversity and abundant numerous mineral resources but at present her tradition faces a lot of environmental problems like pollution by air and water, and natural resources exploitation (Mohammad, 2011). The Malaysian government passed some laws to tackle environmental-related problem such as the National Parks Act

Law, Civil Law Act 1972, and Environmental Quality Act 1974 with some obligations form international bodies (Akanmu, Bahaudin & Jamaludin, 2017).

In respect to the reports provided by federation of Malaysian manufacturers in conjunction with the Malaysian eternal trade development corporation directory (FMM-MATRADE Industry Directory, Food & Beverage, 2015) on food and beverages industry group profile, the sector for food processing account for almost 10 per cent of manufacturing output in Malaysia; with an annual exportation of more than RM5 Billion (USD1.3 Billion) value. Processed food are exported to 80 countries which amounts to two-thirds of the total food exports of over RM10 billion. It should be noted that Malaysia is a fast developing economy, where the contribution of the agro-based sector is very significant, both in employment and GDP. The significance of the contribution from this sector which is tantamount to regulatory and legislation challenges has prompted the industry to comply and be licensed from the Department of Environment (DOE), Ministry of Health (MOH), Islamic Department Malaysia (Jakim) and Local Council (Majlis Daerah) (Siaw & Rani, 2012).

A general term which can be used to refer to various characteristics that are related to the natural and built environment such as water purity, air and noise pollution and the possible effects which such characteristics can have on mental and physical health is called environmental quality (Andreae, 1991). The abatement, control and prevention of pollution is provided by Environmental Quality Act by conducting and licensing environmental assessment report in a proposed private or public sector project to prepare and prevent and determine the environmental consequence of the project (Afroz, Hassan & Ibrahim, 2003). The act was brought into implementation in 1974 with the application

of specific laws and regulations. The standard for emission for air pollutants are outlined by Ministry of Natural Resources and Environment of Environmental Quality in Malaysia. The regulation came into practice on 1st October, 1978. A maximum permissible emission was set by the regulations for various air pollutants from particular process, trade and industry. Also, emission of Nitrogen oxides and Sulphuric oxides from the process of combustion which are not properly regulated (Awang et al., 2000).

Any infringement on preserving environment i.e. noncompliance to enforce or implement the environment law and regulation will face penalty under the Environmental Quality Act 1974 (Act 127) (Siaw & Rani, 2012). Malaysia employed Air Pollution Index (API) to describe environmental quality. Generally, the API is a generalized and simple way to explain the air quality in Malaysia. API is measured from different set of air pollution data. Formerly, it has been applied in Hong Kong and China's Mainland. An updated Air quality index replaced the API in Mainland China in 2012 while Hong Kong changed into a health-based index on 30th December, 2013. The Malaysian government used the API to explain the air quality based on average concentration of air pollutants. The value is calculated from pollutants such as Carbon monoxide, nitrogen dioxide and sulphur dioxide and ozone. The API is reported on a scale starting from 0 to 300: a score of 0 to 50 is rated good, 51 to 100 is considered moderate, 101 to 200 is unhealthy, 201-300 is considered very unhealthy and any value higher than 300 is considered hazardous. A state of emergency is declared in the affected area if an API exceeds 500 (Awang *et al*. 2000).

According to Ahmed, Hassan, and Taha (2004), without having sustainable environment, TQM, Just in Time (JIT) or lean production cannot be achieved. And sustainable environment cannot be obtained without environmental regulation and policy (ERP). In

conclusion, this section affirms the fact as referred by the literatures that Environmental Regulation and policy are set in place by Malaysian government to preserve the natural environment from any form of pollution. Meanwhile, in 1974, an Environmental Quality Act was implemented which is discussed in the following section:

2.5.2 Environmental Quality Act (EQA) of 1974 in Malaysia

One of the laws that serves as the legal tool is the Environmental Quality Act 1974 implemented by the Federal Department of Environment (DOE) in Malaysia to protect the natural resources. The act serves as regulatory body for pollution caused by industries and alleviates the effect of environmental degradation through bodies that form the model of the act which is exclusively a pollution law with a focus on coordinating the industrial pollution through official licensing with the addition of an Environmental Impact Assessment (EIA) order for the management of the activity development (Al-Mamun & Zainuddin, 2013). EIA Act is being regulated through federal legislation and guidelines of the environmental quality order 1987. Environmental problems in Malaysia were handled well when they arose before the introduction of the Environmental Quality Act 1974. It constituted a part of the administrative responsibility of government agencies from local, state to federal authority. Subsequently, in an attempt to formulate an integrated approach in managing the environment, the EQA was enacted in 1974. This was intended to regulate, prevent, abate and control pollution.

The EQA is primarily a pollution control law and forms foundation of legislation for attaining national environmental objectives and policies (Mustafa, 2011). EQA is applicable to the whole Malaysia. It establishes the fact that power should be exclusively exercised by the federal government and should not depend on parallel state enactments

for its efficiency within the state boundaries. It is noteworthy that the Environmental Quality Act is a framework law which for its provision to take effect, there is need for the making of regulations and rules on that provision. DOE was formulated in Malaysia in 1976 under the supervision of the ministry of natural resources and environment. The aim of the ministry is to administer environmental management functions including the EIA processes. Section 51 of the Act further delegates the power upon Minister to regulate in order to achieve pollution control and environment protection.

The existing environmental quality act (EQA) 1974 was amended by the local legislation with the insertion of Section 34A which introduced an intensive power of the environment to the director general in charge to safeguard, promote and protect the accessibility of the environment through licensing, coordination and dissemination of reliable information for public consumption (Briffett, Obbard & Mackee, 2004). Thus, for the first time, there was an introduction of a preventive measure within the EQA as a new environmental approach to support the existing one. The implementation of EIA is aimed at promoting policy objective of sustainable development in Malaysia. In general, it is a concept that seeks to check and balance between economic protection and development and to incorporate considerations on environmental decisions.

At the first stage, under the Quality Act of environment, 1974, the punishment are severe with Section 2 providing a fine of 100,000 Ringgit and/or imprisonment up to 5 years, which is a conviction under the Act to prove challenging in the case of no confession or environmental information with reliable evidence of Actus reus. To comprehend the law as stipulated in the context of inland water resources management for the sustainable and related provisions in the Environmental Quality Act, 1974. The Environmental Quality

Act, 1974 under section 2 gives different points that are related to interpretation of Section 25 on restriction on pollution of inland water. There is a reinforcement of the meanings to establish a model in preventing damages to the environment. Thus, there may a consideration to depart from conventional reasoning to form a certain standard to determine whether or not an offence is taken place under the Environmental Quality Act, 1974 or not. The act referring to the pollution defines it as to be a change in terms of biological, physical or chemical features existing in any part depositing harmful pollutants, substances or waste that adversely affect the beneficial use leading to a situation which is harmful to public health safety including the aquatic and wild life or leading to a violation of human right and causing infringement in which license under this Act is subjected (Sharon, 1998).

The Environmental Quality Act, under Section 2 gives a definition that are related to the interpretation given by section 25 on pollution of land water. It gives an affirmative support in frame working the prevention of environmental damage to land water. Meanwhile, the act might be considered to depart from conventional knowledge to create a clear determination of whether or not an offence committed under the Environmental Quality Act, 1974 (Memon, 2000). In 1974, the EQA controls pollution and also in control of other activities like biological diversity preservation and habitat restoration and protection. Essentially, EQA gives recognition to different environmental measures that control pollution and prevent any environmental damage through system of licensing. Inland water pollution with no accountability to license is an offence punishable according to section 25 of the Act.

Therefore, Environmental Quality Act, 1974 in Malaysia is considered to be the most comprehensive piece of legislation well-known to tackle pollution control and environment protection (Mustafa, 2012). To achieve the aim of the environmental policy, the Act also is used as the basic instrument. The rapid development activities of Malaysia as a developing country that strives for economic growth have unfolded new dimensions to environmental concerns since the early 1980s. The strategies and the scope of this Act have been altered, amended and improved constantly since its introduction for more than three decades ago in the pursuit of environmental policy objectives. The Environmental Quality Act, 1974 needs to be flexible and pro-active in the context of environmental protection to accommodate new measures in order to solve the challenges of environmental problem. The increase in the complexity of environmental issues facing Malaysia is an indication of these changes.

2.6 Organizational Excellence

The word "excellence" is used to refer to the highest rank of evaluation. It is hard to recognize when the state of excellence is attained if what excellence is entailed is not known (Dahlgaard-Park, 2009). The term "excellence" is used frequently in organization and business; however, it similarly implies distinction but business excellence is more applied in private sector organization while in public sector, organizational excellence is more used (Mc Adam, 2000).

According to Attafar, Forouzan and Shojaei (2012), organizational excellence is the practice to make organizations better in growth and path of excellence. According to Saleh Al Dhaafri, Yusoff and Al-Swidi (2014), there are different characteristics of excellence

organization in terms of capital owner, future generation, customer, globalization, transformation or change, supplier, leadership, learning and employees. To achieve excellence that leads to desired performance, an important role is played by each one of these characteristics. The study reported that using the relationships between the performances indicators, organizational excellence could be figured out. The study found that, managers are enabled to evaluate organizations better than the method of organizational performance through organizational excellence. Additionally, organizational excellence has a significant and positive effect on performance (Ooncharoen & Ussahawanitchakit, 2008).

Al Shobaki & Naser (2016) reported that, excellence is a concept that is indivisible, holistic and comprehensive in a sense that it cannot differentiate an organization in a particular area while the performance is broken down in another area, tangles and equilibrium marked by two characteristics of excellence in the various sectors of organization that comprises the two dimensions of modern management parts: real management seeks to achieve excellence and other things that come from management such as events, decisions and systems characterized by excellence are adopted. The two dimensions are two sides from the same coin i.e. they are complementary, one cannot be achieved without other. Also, Pinar and Girard (2008) draw from the literature the three organizational excellence factors (customer focus, innovation and committed people) where the relationships between organizational excellence, leadership strategies and performance of firms are examined. The study showed that firm's commitment to organizational excellence is as a result of higher level of leadership qualities.

In this present rapid change of business environment, organization whether in public or private sector is striving to grow its performances and achieve sustainability among other rivals. This present study therefore focuses on both organizational excellence and sustainable performance. Despite the abundant existence of many literatures on sustainable performance, how performance through excellence is achieved in significantly neglected. The idea of organizational excellence has its origin in the study of Peter and Water (1982) stated by Antony and Bahattacharyya (2010). Organizational excellence is measured in accordance with the association between indicators of performance; thus, performance is less complicated term than excellence (Antony & Bahattacharyya, 2010). The authors opined that, the relationship between several measures of performance is used to calculate organizational excellence. Thus, organizational aiming excellence cannot achieve excellence by just addition of a single level of performance variable. Additionally, Antony and Bahattacharyya (2010) stated that, managers are helped by the organizational excellence to make difference in the level success in an organization in the best manner than the organizational performance.

In quality management, the word "excellence" is used in terms of management and organization to promote the organizational management level to the excellence level that produces excellence result such as customer delight (Dahlgaard-Park, 2009). Additionally, Attafar, Forouzan and Shojaei (2012) stated that the word "excellence" originated from the Latin word "Exceller" that means "to ascend". The study showed that, this word has many meanings in literatures as stated by the authors. For example: according to Peter and Waterman (1982), excellence means quality, value means

Feigenbaum (1983) and proportionality for use by Juran and Gryna (1988). The following definitions are also referred to as excellence:

i. Excellence implies to become superior, transcending and ascending (Amid, 1992).
ii. Organizational excellence means the growth and enhancement in all dimensions of the organization (Yazdi, 2010).
iii. Organizational excellence is an intentional and reasonable creating, introducing, disseminating and strengthening of change to promote organizational efficiency.
iv. Organizational excellence is a holistic way to improve organizations (Harrington, 2005).

Invariably, excellence means perfectness, absoluteness and accuracy (Attafar et al., 2012). In another word, how to make organizations grow and excel better is termed excellence. Moreover, Organizational excellence is regarded as instrument to measure satisfactions of customers, stakeholders and employees at the same time in order to gain comprehensive evaluation on the total performance of the organization.

According to Ahadinezhad, Badami and Mostahfezian (2012), organizational excellence is "a commitment to sustainable development and sustainable growth in order to achieve customer satisfaction and continuous increase in the profitability of the inclusive supportive environment". The study opined that, excellence is created to identify organizational capability to achieve performance excellence, quality growth awareness, superior and quality performance within a competitive model. Therefore, organizational excellence is a set of practices and strategies; not just an ultimate objective to achieve medals and prizes such as achieving sustainability performance through innovation.

2.6.1 Pillars of Organizational Excellence

Organization needs to excel in today's competitive environment. Therefore, organization needs to apply and make use of their resources effectively (Harington, 2005). Organizational excellence is regarded holistic as it improves organizational performance. Harrington (2005) added that there are tools that must be properly coordinated for an organization to outperform others. These five things are referred to as "the five pillars of organizational excellence". The author stated that all these five tools must be applied at the same time in order to yield the desired result. The tools are:

- Knowledge management: Nowadays, knowledge is considered as a key factor to the success of an organization. More competitive advantages are acquired as more knowledge and technology are implemented – technology is in every parts of our life. Just like knowledge exists inside the employee's mind, it should be well documented.
- Resource management: Resources are the sources of everything. Nothing can be accomplished by the organization without resources. The management of resources includes all assets and resources available inside an organization.
- Process management: a set of interlinked practices that produce outputs by processing input is called process. In order to achieve organizational excellence, the process must be managed well.
- Project management: from the common 26 percent of successful projects, the most successful ones are the process engineering and processed redesign.
- Change management: for any organization, change is an inevitable destiny. Therefore, it must be embraced for any organization to be successful. There are

three elements in change management: defining what to change, how to change and making the change happens.

2.6.2 Excellence Model for Sustainability and Organization

According to Attafar et al. (2012), excellence model for organizational sustainability are elements that provide for organizations to measure the level of excellence in their path. In addition, these models are used to assist the organization in making comparison with other organization among themselves with best practices. This leads to motivation for clarification, recognition and self-evolution. The advantages of using the organizational excellence models are as follows (Salekzamani, 2006):

- Using best practicing application, information, facilitation and communication can be shared by organization.
- They are instrument used for perception and management of performance.
- With the aid of the model, organization can amend their application of organizational performance and result.
- Organization can be directed by models on strategic planning and learning opportunities.

The following models are the most famous models for organizational excellence:

2.6.2.1 Japanese Deming Award Model (1951)

Getting started with organizational excellence is not an easy task. It should be theoretically developed from the background in order to avoid failure. A background of path of excellence is provided by refined knowledge and the fourteen point of Deming to be followed by the leadership. After the industrial renaissance was given as credit in the

Second World War during the 1950s, the Japanese reform is named after a scholar called Deming (Petersen, 1990). In the early 1950s however, there was momentary increase in the approach of Deming for excellence. Rungtusanatham, Ogden and Wu (2003) stated that Japan established an award indicating National Quality Award called the Deming prize. This award inspired the creation of other quality awards such as the Malcom Baldrige National Quality Award and EFQM in USA and Europe respectively.

The following are the fourteen points of Deming for organizational improvement as stated by Rungtusanatham, et al. (2003):

- Improvement of product and service through the creation of constancy of purpose with the aim of providing jobs, to stay in sustainable and become competitive.
- Adoption of modern philosophy due to the emergence of new economic age; thus, western form of management can learn their responsibilities; take on and challenge the change in leadership.
- Stop mass inspection dependence for quality to improve and develop.
- Put an end to awarding sustainable alone using the price tag. This can be by minimizing total cost and build a long relationship with one supplier for any one item.
- Permanent development of system of service and production
- Institutionalizing training for job.
- Leadership institution. Leadership and supervision are needed to assist workers to get better job.
- Fear should be driven out to enable people and workers in the company to work effectively.

- Barriers between departments must be broken down. The employees should work as a team to have a foresight on any looming production problem.
- Removal of slogans, workforce targets, zero defect recommendation form of exhortation and new level of productivity enhancement.
- Removal and avoidance of management by objective, management by numeric goals, standards of work and replacement with leadership.
- Elimination of obstacles that steal the privilege of workers' pride of profession hourly.
- Establishment of effective programs on self-improvement and self-education.
- Everyone in the organization should experience achievable transformation.

2.6.2.2 The Model of Peters and Waterman (1982)

Peters and Waterman (1982) gave explanation on forty two companies out of the existing best companies in USA while the general principles that many organizations can employ were provided by Kanji and Sa (2007). In the extensive research plan of Peters and Waterman (1982) five hundred organizations were selected in fifty three scopes (Attafar et al., 2012). Eight characteristics of successful organization that lead to organizational excellence are highlighted in the study as follows:

- Sentiment for action: Initiation of action and proffering solution to every difficulty; and to accept failure.
- Closeness to customer: this dimension is considered to be the most critical and paramount feature of a successful organization. Organization's message should focus more on demands and needs of customers.

- Entrepreneurship and autonomy: Peters and Waterman stated that organizations must apply new programs and innovative. This is achieved by communication easiness, work decentralization, freedom and non-existence obstacle when interacting with each other.
- People productivity: employees are focused on as the center of organization to promote gain benefits and productivity. It is also believed that, employee empowerment is the most critical element that positively affect productivity and quality.
- Value-driven, hands-on: in the system value, the organization's belief should be investigated
- Stick to the knitting: Peter and Waterman's viewpoint is to focus on the major task.
- Lean staff, simple form: the structure and condition of work inside the organization is important for a successful company where there is awareness of work processes for the employees.
- Simultaneous Loose-tight: successful firms are those that are concurrently centralized and decentralized; it is argued that flexibility is mainly coexistence.

Attafar et al. (2012) stated that the research which performed by Peters and Waterman (1982) was initiated at the beginning of 1980s constituted the fundamentals of their theories. The management book produced by Peters and Waterman titled "In Search of Excellence" got published in 1982 and it was believed to be one of the biggest and widely selling books as stated in an interview by Tom Peters in 2001. The model started with the analysis of 7S framework of McKinsey that consists of seven requirements of success for

excellence namely: systems, strategy, staff, style shared vale and skills (Dahlgaard-Park, 2012). The main contribution of Peters and Waterman is the recognition of the importance of soft dimensions in a quick manner in the realities of an organization such as: staff, shared value, skills, styles and system. Everything is get done by managers if and only they make use of those 7S judiciously as noticed by Peters and Waterman. Dahlgaard-Park (2012) stated that most of the companies that are identified with the Peters and Waterman's concept are not successful today. This shows that any model of excellence has its own shortcomings. Thus, there is need for deep analysis to find the model of Peters and Waterman in relation to newly developed excellence models.

2.6.2.3 The Model of Malcolm Baldrige (1987)

In 1987, the US congress created the award of Malcolm Baldrige National Quality (MBNQA) in order to recognize performance and quality for organization to achieve long-term effectiveness and to promote excellence in American companies (Dejong, 2009). According to Cauchick Miquel and Campos (2013) in a research conducted, a national sustainable excellence framework were administrated by 76 nations while Malcolm Baldrige (MBNQA) criteria was used by only 50 of them. Seven categories and items belong to MBNQA. The seven classification of the Baldrige requirements for organizational excellence (Davis, Marcos & Stading, 2005; Peschel, 2008) are:

- Leadership: The organization and a focus on the organizational practices of the top management leadership are being directed.
- Strategic planning: Examining different sets of plans and strategies with an organization.

- Market and customer focus: this is concerned with policies within the organization that are connected with the expectations and needs of the customers.
- Information and Analysis: In order to improve the capabilities of planning, the level of information effectiveness is examined.
- Focus on Human Resources Management: Focus on applying workforce capabilities and using potentials in organizational strategy.
- Process Management: the process in the organization are investigated on how they are designed, improved and managed.
- Results from Sustainability: This is examining and focusing on the overall organizational performance by relating and comparing competitors.

2.6.2.4 European Foundation Excellence Model (EFQM) (1991)

The establishment of EFQM was made to support organization to measure the level of performance – organizational improvement and customer satisfaction are achieved through performance measures. Different countries adopted the model in order to be aware of the achievement and performance rate. The EFQM has nine criteria: the first five are called the "enablers" while the last four are called the "results" from the achievements and performance activities (Ahadinezhad, Badami & Mostahfezian, 2012). The EFQM's nine criteria for excellence model are as follows:

- Leadership: this involves evaluating the effect of leadership in an organization in order to develop the organization's achievement and objectives.
- Policy and Strategies: these are the plans and strategies of an organization implemented through procedures and programs.

- Employee: this is meant to examine the plans and policies that are designed and implemented for an organization to develop and realize fully the potentials of the employees.
- Resources and partnerships: to evaluate the plan and strategy which are designed to manage and support the effective operations by the organization.
- Process: this explains how organizations can increase the value of their customer by proper management of their processes.
- Result from customers: this criterion examines the performance of the organization in relation to customers' results.
- People Result: Examination of the organizational performance from the point of people.
- Society Result: Examination of the organizational performance relative to the society.
- Key performance results: this is the evaluation of performance excellence of an organization in relation to set-up plans.

2.6.2.5 Leadership Excellence of Kanji

The leadership excellence of Kanji is a model used in measuring the sustainable excellence level through leadership-based constructs (Oakland & Tanner, 2008). The model of leadership excellence is developed to be applicable to private and public sector. The excellence model is investigated with a pyramid model (Kanji, 1998). The strength of the model is the empirical technique employed to prove the casual relationship by Kanji. The leadership excellence tool of Kanji has been adopted due to its advantages as the model is developed to suit both public and private sector which many studies also

employed (Oakland & Tanner, 2008). A positive and significant relationship was found between excellence and performance in both private and public sectors. In addition, the study concludes the impacts of sustainable excellence on private and public sector have no significance considering the maturity level of similarities between private and public sectors.

2.6.2.6 China Performance Excellence Model

According to Ree and Ma (2009), modification of Malcolm Baldridge Model led to the China performance excellence model with seven categories: analysis and improvement, measurement, leadership, process management, customer and market strategic planning, resources management and performance results. The leadership terms from the categories are: leadership, customer and market and strategic planning; the other categories such as: performance results, process management and resources management are referred to as the "result term" (Ree & Ma, 2009). Using measurements, analyses and improvements, both leadership and result terms are connected.

2.6.2.7 Malaysian Total Performance Excellence Model

Notably, Dowe, Samson and Ford (1999) reported that MBNQA, EFQM, the Kanji's model and some other sustainable excellence models originated from TQM. According to Hussain, Abdullah, Idris and Mohd Sagir (2001), the following constructs are found in the Malaysian Total Performance Excellence Model:

- Leadership: this element is included in many literatures as part of critical success factors under TQM and it is regarded as the most important.
- Change management: this is a variable on how change is managed to decrease sensitivity towards change in an organization.

- Values and culture: these are critical factors that affect the internal performance and development of an organization and the strategic process.
- Strategy and objectives: a strategy that can be measured and followed is very important for any organization and objectives that can be achieved.
- Resource management: Resource management is more focused on by modern organizations in an efficient and effective method.
- Best practice: Many firms are usually striving to be part of world class organization. Therefore, best practices in managing activities are very important to follow by any organization with world-class motives.
- Innovation: in any organization, innovation is the key success and it occurs in three ways: process; organizational and product (Neely & Hill, 1999).
- Employees' satisfaction: the life assets of an organization are the employees; success and implementation of strategies and plans are achieved by the employees. Therefore, the satisfaction of employees is important in order to enhance organizational excellence and performance.
- Community, customer and stakeholder focus: external environment such as: stakeholders, community and customers of the organization are focused on from this category.
- Productivity: This is measured by the effectiveness of the employees; it is the final stage of internal management.
- Total performance: total performance is achieved when the previous constructs are working together. Market share and image, revenue and profit are the performance measures.

The performance of sustainable organization remains one of the main issues related to the development of any nation. Therefore, the enhancement of the overall impact of excellence models has been the attention of decision makers and managers of both private and public organization. The important roles of excellence models and quality management have been acknowledged widely in the literature as the most effective strategies that assist organizations to achieve competitive advantage and sustainable performance over other competitors. These strategies are recognized in Malaysia in general despite the short history of those practices.

In spite of the origin of most of these models for organization excellence to be from the West, they can enhance organization performance developing countries such as Malaysia and federation of Malaysian manufacturing in particular. The study looked into the model of Peters and Waterman (1982), the European foundation excellence model (EFQM) (1991), Japanese Deming Award Model (1951), the Model of Malcolm Badrige (1987), the Leadership Excellence of Kanji, the China Performance Excellence Model, and the Malaysian Total Performance Excellence Model whereas the European Foundation Excellence Model (EFQM) (1991) was employed to measure organizational excellence as a mechanism that can achieve sustainability in sustainable performance.

In conclusion, the creation of quality awards in Europe such as EFQM were inspired as an extension of Japanese Deming Award Model. The model was created to support organization in measuring the performance level. It is found that, as a heart of excellence, innovation plays an important role in enhancing organizational excellence through innovative strategies and practices such as TQM. Similarly, this study employed this

model as it comprises nine criteria: the first five are called “enablers” while the last four are referred to as the “results” of the activities’ achievements and performance.

2.7 The Relationship between TQM, ERP, organizational Excellence and Sustainable Performance

It is not doubtful that TQM and ERP combine together has gained people attention in both business and academic environment (Ahmad & Schroeder, 2002; Besseris, 2012). Such impact can be traced to the unprecedented high number of published articles in an attempt by the scholars in that field to establish its theories and concepts. In addition, the success from the implementation gained so far by the researchers make it to be well renowned. This has led to announcement of ERP as part of the critical success indicator of an organization in technology-driven society of today. In many organizations, a significant number of opportunities have been opened for environmentalists such as environment managers and sustainable environment creating teams.

Therefore, if ERP is considered as critical success factor of an organization, it can be said that TQM can be achieved best through effective ERP which eventually lead to a sustainable performance. In view of this fact, the interest of the researcher is to investigate how TQM, ERP and organizational excellence affect sustainable performance.

2.7.1 TQM-SP Research

In general, many studies have found that TQM has a great effect on sustainable performances (Baird, Hu & Reeve, 2011; Laxmikumari, Kumar & Ramana, 2014). Yet, with global comparison, reports of low sustainable performance are surprisingly common in Agro-allied industry; also, there is relative low sales of agricultural produces due to low responsiveness of entrepreneurs in producing competitive and quality agro-based

produces (Ahmad, 2009). There is an increasing interest gained by the TQM among practitioners and researchers of operations and sustainable performance. One of the growing issues that led to the importance of TQM is due to escalating damages caused on the environment such as increasing in pollution level, reduction in raw material resources and overflow waste sites. However, sustainable performance is not just about creating a friendly environment but also about making high profits and good business sense. It is therefore, not a cost center but a business value driver (Wilkerson, 2005). Since manufacturing companies have always been charged for environmental liabilities (Rao, 2008), the integration of environmental initiatives have become a matter of urgency across the entire level of the management but not limited to within the company's wall in order to ensure sustainable performance for the company (Cote et al., 2008).

TQM adoption has great impact on sustainable development (Christofi et al., 2008; Isaksson, 2006; Izvercian et al., 2014; Todorut, 2012); enhancing customer performance and production performance (Agus & Hassan, 2011); direct relationship of TQM on operational performance (Baird et al., 2011); positive effect on labour productivity (Benavides & Ortega, 2014; Mohammed et al., 2013); effect on innovation in service organization (Bon & Mustafa, 2013; Perdomo-Ortiz et al., 2006; Prajogo & Sohal, 2006); and impacts on educational system (Töremen et al., 2009; Militaru et al., 2013). The relationships between quality management practices and sustainable performance have been examined by many studies (e.g. Ali & Alkayed, 2019; Brook & Pagnanelli, 2014; Daily & Huang, 2001; Ganapathy, Natarajan, Gunasekaran & Subramanian 2014; Glover, Cahmpion, Daniels & Dainty, 2014; Gond, Grubnic, Herzig & Moon, 2012; Idris, 2011; Isaksson, 2006; Iyer, 2018; Lee & Schaltegger, 2014; Lega, Prenestini & Spurgeon, 2013;

McAdam & Leonard, 2003; Rose et al., 2019; Rusinko, 2005; Sisaye, Bodnar & Christofi, 2005) within distinctive contexts leading to different results as presented in Table 2.3.

Table 2.3
TQM-Sustainable Performance Studies and Results

Author(s)	Results	Future Study/Gap
Ali & Alkayed (2019)	The financial (greatest impact, 0.726 level of impact), social (0.710), steering (0.689) and capacity factors (least impact, 0.666) dominate the current reality of sustainability	There is need for conducting an analysis on the current regulatory processes to assess the financial, social, steering and capacity factors in terms of sustainable development
Brook & Pagnanelli, (2014)	The integration of the three dimensions of sustainability are significant for the innovation project portfolio management process within firms	The current studies fall short in addressing the need of aligning specific industry characteristics of sustainability with innovation project portfolio management solutions to improve the effectiveness of the decision making
Daily & Huang (2001)	HRM factors, identified as top management support, environmental training, employee empowerment, teamwork and reward systems are significant for the implementation process of achieving sustainability through EMS	Further research is required in order to develop an instrument to test the model and quantify the impact of HR factors on the deployment of an environmental management program.
Ganapathy, Natarajan, Gunasekaran & Subramanian (2014)	The role of management practice such as ISO 14001, TQEM is more significant towards manufacturing sector sustainable performnace than innovative practices	In future, the manufacturing sectors have to invest more on R&D activities and training of the employees related to innovative practices in order to improve sustainable performance
Glover, Cahmpion, Daniels & Dainty (2014)	Supply chain practices are identified to be dominant player for green sustainable practices	Future research should focus attention on how green sustainable practices can be legitimized when they compete or can be made consonant with the dominant logic of cost reduction and profit

		maximization or indeed how the sustainable logic can become the dominant logic.
Gond, Grubnic, Herzig & Moon (2012)	Management control system and sustainability control system do not necessarily take into account the underlying infrastructure that allows making sustainability calculable and thus manageable.	The configurations of our typology can be approached as benchmarks to assess actual organizations' level of integration in future studies
Idris (2011)	Leadership within the TQM constructs is the most influencing factor; while to impact on sustainable company performance, best practices and stakeholder focus must be implemented. Customer focus has the highest correlation (b = 0.456) while best practices has the lowest score (r = 0.206).	This study uses a sample of ISO certified companies as our respondents, generalizations are only limited to those companies. We must bear in mind that many of these companies are under the SME category, where their ISO certification has enabled them only good reputation, which might not necessarily be attributable to characteristics of good manufacturer or service provider
Isaksson (2006)	To integrate TQM and sustainable development, quality indicators should be added to the economic dimension	The research on synergies is limited on organisational sustainability.
Iyer (2018)	TQM as a management approach is centered on quality, based on the participation of all its members and aiming at long term success through learner satisfaction and benefits to all members of the institution and society for sustainable international development.	Sustainable policy recommendation may be taken to strengthen both quality and quantity educational services concerned to both knowledge and character in educational sector.
Lee & Schaltegger (2014)	Leaders can strongly influence a process of change in mind sets, practices and curricula to incorporate sustainability into higher business education institutions. Whereas bottom-up leadership initiatives are crucial, leadership support from top	The leadership analysis, however, shows that the innovation and establishment of MBA in sustainability management happened in the entrepreneurial phase, leaving

	management is seen as important to enable larger, more radical steps of transformation.	gaps between different organizational units.
Lega, Prenestini & Spurgeon (2013)	The sustainable performance of healthcare systems and organizations is correlated with management practices, leadership, manager characteristics, and cultural attributes that are associated with managerial values and approaches.	The empirical efforts of researchers must extend our understanding of the relationships between managerial roles and performance and between management practices and performance.
McAdam & Leonard (2003)	Quality management models and methodologies established on the broad principles of quality are seen as a foundation and catalyst for effective CSR for organization sustainable growth.	There is need for broader and deeper studies to see if organizations can retain a balanced approach to CSR in relation to other factors such as adverse market, and financial conditions and less developed TQM systems.
Rose et al. (2019)	Overall, the general principles of Integrated Farm Management were found to be coherent and familiar to most of our respondents. However, the concept performed poorly in terms of its resonance, simplicity of message, differentiation from other similar terms and theoretical utility	Research and policy communities could also consider the direction of travel for sustainable agriculture, considering whether concepts need to be more integrated, or rather certain ones prioritised, in order to limit the problems of lack of differentiation
Rusinko (2005)	The Deming cycle framework is iterative and based on continuousos improvement can benefit organization at any stage of environmentally sustainable practices by applying it.	Future studies on implementing sustainable practices in organization should examine other framework and systems which include ISO, EMA (energy and material analysis) and LCA (life cycle assessment).
Sisaye, Bodnar & Christofi (2005)	TQM needs to incorporate sustainability in order to maintain and strengthen an organization's competitiveness and productivity.	It is expected that in the long run, the culture of continuous improvement becomes part of an organization's balanced scorecard system and is thus

	incorporated into the strategy and mission of an organization.

Corredor and Goñi (2011) examined the relationship between TQM and sustainable performance considering TQM as practices of internally consistent system. By using the universal approach to test to know the level of adoption of TQM among the firms, the study examined the association between two variables and equally tests for isomorphic effects on other companies. The study used Spanish firms that were awarded TQM prizes between 1997 and 2003. The study revealed TQM pioneers experience sustainable performance gains. However, similar results were not experienced by the late adopters. The study concluded that firms that adopt TQM are not necessarily more successful than others before engaging in the system.

Also, Azizan (2010) explained practices of TQM at within the context of Malaysian economy at the level of small to medium-sized enterprise. Through a comprehensive review, the objectives of the study were designed and interview was conducted with academic scholars in the TQM field. The study's objectives were to determine the differences in both performances and features as engaged by the lower and higher performing organization. The study showed that the three levels of TQM implementation that involve in a high degree of strategic involvement of TQM principles are quality control, quality assurance process with involvement in broader application of management and system-wide application of TQM. Eight SME firms are focused on under this research and simple technology such as plastic injection molding and metal stamping were employed. In this study, there is an understanding of the practices of TQM providing advice on design for professional managers and academia who operate within business of

SME. The paper concludes that there is a logic and structure to the application of TQM and sustainable performance in business.

On the other hand, Valmohammadi (2011) provided a valid and reliable TQM constructs and an instrument for measurement in the domain of medium to small-sized manufacturing firms in Iran. From different statistical analyses, it is revealed that, there are significant and positive associations between the practices of TQM and sustainable performance of SMEs. The study showed that an important role is played by leadership in enhancing sustainable performance of Iranian manufacturing SMEs. The limitation of the study is that only manufacturing SMEs in one single region was taken as sample. This study has the capacity to promote TQM understanding and its impact on sustainable performance in manufacturing SMEs in Iran among practitioners and researchers. In addition, the author stated that there is a special focus on Iranian manufacturing SMEs within the context of developing countries in quality management field. Therefore, from the review of the literature, there is no account from any study with a detailed analyses of TQM practices and sustainable performance in manufacturing SMEs of Iraq as the context.

More so, series of empirical studies has linked TQM to sustainable performance i.e. business planning and firm size (Haar & Spell, 2008); information capability (Zarraga-Rodriguez & Alvarez, 2014); market competition (Chong & Rundus, 2004); organizational culture (Baird, Hu & Reeve , 2011; Rad, 2006) which all resulted to positive results. The requirement toward involvement of sustainability in business leads to introduction of TQM, an approach to achieve sustainable performance. It is defined as "strategic collaboration of partner firms to manage the operational and environmental

impacts of activities by coordinating the intra- and inter-organizational processes" (Economic and Social Resource Council, 2015). The TQM explains how and why integration of green led to more effective performance and what or who are meant to be integrated (Wong, Wong, & Boon-itt, 2015).

The integration of TQM within an organization is expected to affect cooperative activities positively as connected to sustainable performance (Canning & Hanner-Lloyd, 2001). Therefore, TQM is considered as "a novel concept when firms develop an approach to strategically integrate human resources, leadership, benchmarking, service design, quality assurance and technology to reduce environmental impacts" (Economic and Social Resource Council, 2015; Zhu et al., 2010). Successful practices of TQM contribute to reduction in environmental impacts of agro-allied industries (Zhu et al., 2010).

The relationship between TQM and sustainable performance is still a new phenomenon. Recently, studies showed that Green TQM satisfies social expectation and improves operational efficiencies, reduces waste, conserves resources (Lee & Wu, 2014). In the same vein, green TQM is characterized as that "which is designed not to only be environmentally friendly, but also economically functional" (Pazirandeh & Jafari, 2013). Additionally, Lee (2011) found that, selection of optimized management practices can minimize cost and reduce environmental effects. This finding showed that, environmental practices through TQM increase the sustainable performance of business organizations. These literatures have also a message in common: TQM reduces the environmental effect of organization while enhancing the operational efficacy which includes better cost savings and resources utilization. The Table 2.4 below presents the summary of the

domains from the previous literatures where TQM and sustainable performance are studied. However, none of this study was conducted on food and beverages companies.

Table 2.4
The Domains from the Previous Literatures where TQM and Sustainable Performance are studied

Author(s)	The Domain of the Study
Azizan (2010)	The level of small and medium-sized enterprises (SMEs) within the context of Malaysian economy
Baird, Hu & Reeve (2011)	Australian manufacturing and service business.
Gadenne (2012)	Medium to large organisations operating in Australia.
Lintukangas, Kahkonen & Hallikas (2019)	Large- and medium-sized manufacturing companies in Finland.
Corredor & Goñi (2011)	The most competitive Spanish firms adopting TQM.
Ganapathy (2014)	Indian manufacturing sector
Haar & Spell (2008)	Rates of Adoption of TQM by New Zealand firms
Intra & Zahn (2014)	The implementation of a Lean Production System (LPS) by the MAN Truck & Bus AG (international providers of commercial vehicles).
Krittanathip, et al. (2013)	Self-assessment evaluation for total quality in the retail sector.
Lee (2011)	Automobile industry (Hyundai Motor Company)

Pazirandeh & Jafari (2013)	Logistics effectiveness and logistics efficiency at Nordic multinationals.
Idris (2011)	Companies under SIRIM directory consisting of ISO 9000 certified companies
Lega, Prenestini & Spurgeon (2013)	Health care organizations and health systems
Valmohammadi (2011)	TQM practices on Iranian manufacturing SMEs
Iyer (2018)	Educational institutions in south India
Wong, Wong & Boon-itt (2015)	Metal analysis of Green Supply Chain Integration (GSCI) articles.
Zarraga-Rodriguez & Alvarez (2014)	Companies with the EFQM model
Zhu et al. (2010)	Manufacturing enterprises on environmental-oriented supply chain cooperation (ESCC)
Soderholm et al. (2019)	The public management and sustainability transitions Literatures
Stanciu, Constandache & Condrea (2013)	Quality management system model for performance evaluation

2.7.2 TQM-ERP Research

Environmental issues are business issues and that has led them playing, increasingly, a more significant role within organizations. Christofi et al. (2008) stated in their study that

sustainability needs to be incorporated inside TQM to strengthen and maintain the productivity, services and competitiveness of an organization. It should be noted that the global and national regulations are the force attracting businesses to take into consideration the environmental effects of all the processes, service and products (Stainer & Stainer, 1997).

In their study, environmental performance and top management commitment with the mediating effect of an environmental information system through feedbacks from interview survey of chief management accountant and financial officers in the top 200 Australian listed companies. The primary motive of the study is to investigate the commitment of top management as an antecedent factor to environmental issues, for the adoption of a well-sophisticated internal environmental information system that are measured by timeliness, aggregation, integration and broad-scope of the information. The results showed that commitment of top management and environmental sustainability is related to the integration of sophisticated internal environmental information system.

Also, Sarkis (2001) stated that organizational environmental regulation and policy has always been a key factor to progressive thinking theorists and management practitioners in the early part of the 1990s. The study researched on the role of manufacturing in corporate environmental sustainability. The study posited that the manufacturing functions and natural environment are becoming extremely connected. From total quality environmental management (TQEM) point of view, the Agency for United States Environmental Protection approved the categorization of TQEM into seven elements namely: environmental quality management systems, environmental leadership, environmental quality assurance, human resource development, environmental

measurement, stakeholder emphases and strategic environmental quality planning. The research study concluded that integration and development of environmental issues into practices of corporation ranges from industrial ecology to green purchasing will be affected by environmental practices and pressures.

In the same trend, Rebelo, Santos and Silva (2014) examined a general framework for quality integration and safety and environmental management system. The study's objective is to develop a general model of an Integrated Management System and Quality Environment Safety (IMSQES) which can be linked to many management systems. A survey was carried out in a real environment from 160 employees of a Portuguese organization where the proposed framework was applied in the first place for the Environment and Safety Management Systems and quality integration. The result of this study highlighted: the reduction of differences between resources optimization and individual systems; creation of additional values to the sustainable through elimination of several types of wastes; reduction in the number of external and internal audits; improvement of partnership with suppliers of goods and services; and integration of business management components in a global market.

As the previous literature showed that the connection between TQM and ERP in food and beverage companies context are scarce, the researcher found that there are still some relevant studies (Konig, Silva, & Mhlanga, 2013; Sangodoyin & Iipadeola, 2000; Psomas & Fotopoulos, 2010). Although these studies contain valuable and resourceful information that can help understand the relationship between TQM and ERP, it is important to extend these works using a more methodologically rigorous research to distinguish the pattern of the interrelationship between TQM and ERP empirically.

2.7.3 ERP-SP Research

At various levels of firm, environmental practices deal with a great variety of active implementation. From the past studies according to Zhu et al. (2008), it is believed that environmental practices must be incorporated into quality management and sustainable performance at all stages: design; manufacturing; distribution; and disposal. In design of product, the eco-design is the incorporation of environmental considerations. It means change in services, products and systems that optimize the positive and reduce the negative effects in a complete life cycle (Karlsson & Luttropp, 2006). Green operation is connected to clean production in manufacturing, a term defined by Baas (1995) as "the conceptual and procedural approach to production that demands that all phases of the life-cycle of a product or of a process should be addressed with the objective of prevention or the minimization of short and long-term risks to humans and the environment".

In addition, in 2013, the community-based natural resources management facility stated that the Danida funded programme has been aiming and working hard to enhance the capability of the community-based organization and Malaysian Non-Government Organization to influence sustainable development and practices relevant to biodiversity conservation and natural resources management such as recognizing the importance of gender equality and right of the indigenous people. There are some relationships between management systems and environmental degradation and development which make sustainable development impossible in the world without them due to the fact that environmental and developmental issues go together with natural and administration resources management (Azahan, et al., 2009). The study confirmed the important essence of legislation and policy.

The environmental regulations are connected with the packaging, transportation, decisions on inventory and their effects on CO_2 emission in logistics and impacts of reverse logistics on the environment (Neto, Bloemhof-Ruwaard, Van Numen & Van Heck, 2008; Sarkis et al., 2004). Therefore, this study focuses on environmental regulation and policy related to social, environmental and economic sustainable performance. Prior literatures have discussed the naturally resourced-based view to connect environmental practice under ERP to environmental performance; for instance, the adoption of environmental practices like waste management, total quality environmental management, supplier assessment, environmental management system and design of environmentally friendly product leading to a better environmental performances (Aragon-Correa & Sharma, 2003; Rao, 2002; Zhu & Sarkis, 2004).

In other word, ERP has a direct and positive impact on eco-design, environmental monitoring with suppliers and green purchasing environmental cooperation with customers. Green performance is measured in the study as the use of regulations and policy to reduce energy consumption and transportation cost and tracking environmental performances among other environmental practices. This study however has the underlying assumption that ERP for the purpose of environment may differ from quality management resources for sustainable performance. TQM can promote control of coordination and enhance coordination, thereby strengthening the associations between ERP and sustainable performance.

This study applies ERP as construct which comprises indicators about environmental practices that supports the visibility and control of activity during the process of production such as: sharing of information with supplier, inventory control and

technologies which support the inter-dependence management between different functional aspects such as the manufacturing teams and the product design in order to achieve sustainable performance. Hence, the model of this research is built from the findings of the past literatures on the association between the critical factor of TQM, ERP and sustainable performance (Klassen & Vachon, 2003). The study therefore posits that ERP and TQM elements strengthened the impact of environmental practices as they act as facilitator in the incorporation of process along the supply chain and metrics are made visible regarding the transportation costs, volume of material and other production-related indicators. This shows that the environmental efforts and operational practices should be made to improve the environmental performances of the firm.

2.7.4 Organizational Excellence and Sustainable Performance

Organizational excellence and sustainable performance are very important factors for success, goal achievement, advancement, organizational competitiveness and development. Therefore, in a short, medium or long term objectives, organizations tend to achieve them. There is interrelationship between organizational excellence and sustainable performance where one of them can lead to other; that is to say, in an organization, excellence can lead to sustainable performance (Wiklund, 1999). Organizations with excellence of 60 per cent or above are considered as excellence organization according to EFQM. Additionally, excellence is considered as a level of outstanding performance by existing models of excellence (Antony & Bhattacharyya, 2010).

Antony and Bhattacharya (2010) investigated the association between organizational excellence and sustainable performance in Indian SMEs. The study stated that

organizational excellence can be determined in accordance with connection between the indicators of the performance. The study evaluated the association between excellence and sustainable performance using data and information gathered from 407 respondents in Indian SMEs. The results opined that, excellence and sustainable performance is measured by consolidation of performance variables. Therefore, according to the relationship between the sustainable performance variables, calculation of organizational excellence can be done. The study concludes that, managers are supported to differentiate and evaluate organization through excellence in a better way to achieve sustainable performance.

Moreover, Ooncharoen and Ussahawanitchakit (2008) evaluated the relationship between organizational excellence and sustainable performance in Thai hotel business. The results from the study are based on survey method by getting data from 278 Thai hotels. The findings showed that, there is positive and significant association between organizational excellence and sustainable performance. Additionally, Ciptono (2005) examined the relationship between world-class companies, Deming's principle, operational excellence and company performance by using 1332 questionnaires in 49 oil and gas companies in 140 strategic business units in Indonesia. The proposed model is analyzed using structural equation modelling (AMOS). The results showed that, the Deming's principle has significant, positive and indirect effect on the company's performance. Therefore, the excellence model principle of Deming enhances and affects the sustainable performance of the company. From the past studies on the association between organizational excellence and sustainable performance, it is revealed that, excellence is precedent for any organization for sustainability to be achieved. In addition, there are inconsistencies in

the effects of TQM and ERP on sustainable performance. This study therefore suggests organizational excellence as variable that can explain the mechanism for a high effect.

2.7.5 TQM and Organizational Excellence

From the history and development of TQM, it is revealed that, quality movement has passed through many changes (Ionica et al., 2010). In the process of manufacturing, the changes to prevention mode from inspection mode are regarded as the most important phase in quality building. Presently, the concentration is both in the processes of manufacturing and in all activities that are correlated to external and internal customers (Ionica et al., 2010). Furthermore, the basic principles of TQM is to motivate business practice to enhance output quality, reduce cost, satisfy customer and increase productivity. Thus, TQM practices promote business and organizational excellence (Lee, 2002). Many researchers have discussed the relationship between TQM and business excellence and conclude that there is strong relationships between the variables. Ionica et al. (2010) stated that, the underlying principle of EFQM excellence model has implicit and explicit relationship with the TQM fundamental principles as shown Figure 2.4.

A number of 28 awards, frameworks and models were reviewed by Sharma and Kodali (2008) in the study of implementation of TQM in the process of manufacturing and made a comparative analysis to identifying the factors of TQM. The study developed a framework for sustaining manufacturing excellence through the implementation of TQM. To achieve excellence in manufacturing, TQM is regarded as an important criterion. Therefore, the study concludes that, the continuous process of quality management is the continuous effort to achieve the highest level of performance.

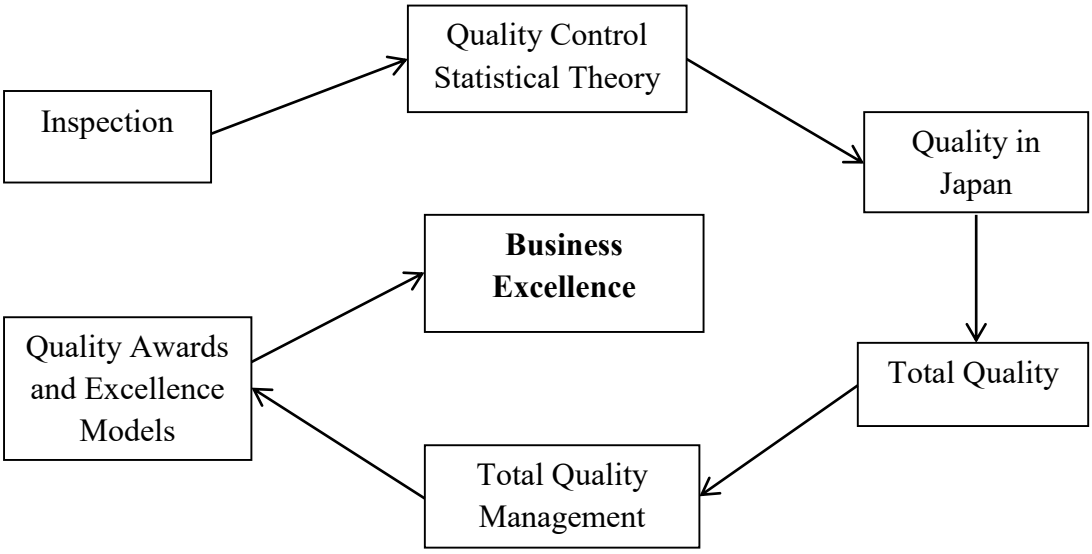

Figure 2.4
Life Cycle of Quality
Source: Ionica, Baleanu, Edelhauser and Irimie, 2010

Lyons, Acsente and Waesberghe (2008) examined the integration of knowledge management and quality management into a framework and operational model to improve excellence. Learning approaches were presented by the study needed to implement the integration of knowledge management and quality framework for engaging the use of management tools, workforce and leadership.

Likewise, Hafeez, Malak and Abdellmeguid (2016) analyzed and compared ten notable writers on the importance of characteristics of TQM philosophy by using survey questionnaire to get data from 40 European organizations. The result shows that, there is difficulty to translate TQM theory into practice in an organization. Additionally, the institutional and commercial needs that are needed to apply TQM as a benchmarking and business strategy from the best practices are understood by the organization. Lee (2002) investigate the manner at which business excellence is maintained through the use of

framework of the best practices of TQM using data collected through in-depth interviews and face-to-face of organization's members who take the responsibility of turning the business into becoming Singaporean quality award winner. The outcome of this study can be used as guideline for any business organization that desire to sustain and promote TQM in achieving business excellence.

On the role of TQM and ISO 9000, Hassan, Ali and Lam (2007) examined the effect of applying TQM and ISO 9000 together and how the combination can achieve competitive advantage and business excellence for organization. While personal interview was employed for six companies, this study showed that, companies that apply ISO 9000 and TQM concurrently are expected to have edge in customer satisfaction, product quality and delivery and productivity. In summary, the role of TQM to enhance business and organizational excellence was experienced as reported by many studies. Majority of the models of business excellence are in accordance with TQM and some of the models of quality have changed into excellence models.

2.7.5.1 The EFQM Excellence as a Framework for TQM

The model of EFQM has been used to shape the quality of organization since the early 1990s and to detect areas that need improvements. The model is a non-directive, generic and broad framework that is implemented in three ways (EFQM, 2013). First, the model can be used to serve as instrument of self-assessment to evaluate weakness and strengths in a quality management organization. Second, the model is used as a reference frame for a quality policy of organization. Finally, organizations employed the model in order to apply for quality achievement in Europe (Bou-Llusar et al., 2009).

The area of outcome represents the "result criteria" of an organization or the organizational performance while the "enabler criteria" is used for the organizational areas. The human resources, the leadership, process control, policy and strategy are called the enabler criteria. The result criteria are: society, customers, professionalism and results (costs and outcomes). The EFQM model comprises five critical factors (areas of organization) and four result criteria (Result areas) as presented in Figure 2.5.

The Table 2.5 presents the result and enabler criteria. The model is in accordance with the assumption that superiority and improvement of performance is achieved through operational performance (Boulter et al., 2013; Doeleman et al., 2014; EFQM, 2013). The model of EFQM proposes a particular manner of relationship between and within the result and enabler criteria (Gomez et al., 2015). The model assumes that in order to establish continuous improvement, organizations should focus on all its levels and activities.

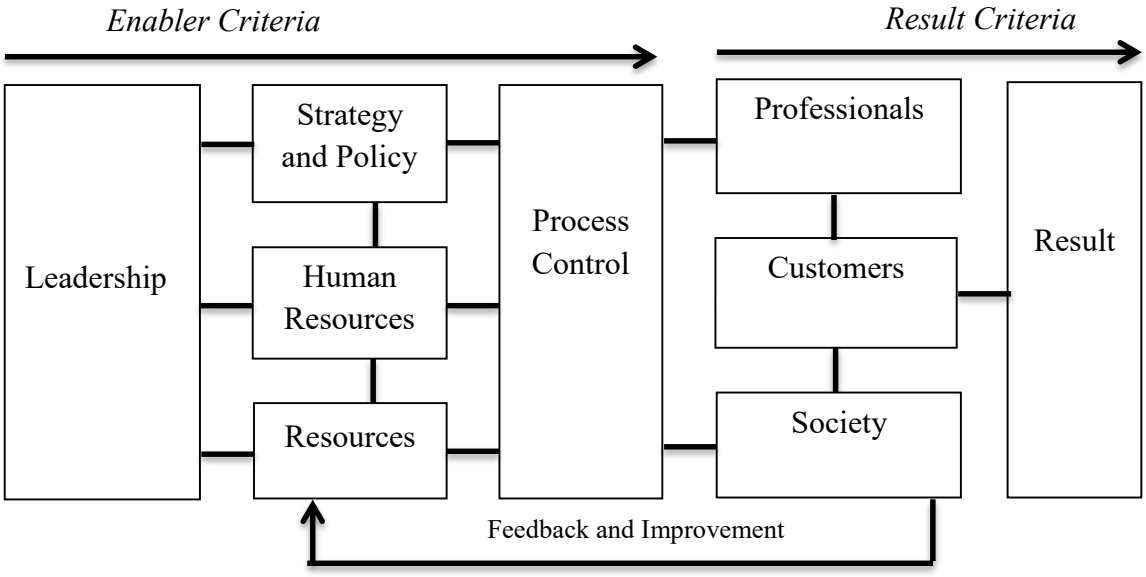

Figure 2.5
The Model of EFQM
Sources: Adapted from EFQM, 2013

Additionally, EFQM (2013) states that there must be balance in various elements: the managerial combination of all the enabler criteria will have a larger impact on the outcome criteria in comparison with focus on the individual criteria.

2.7.5.2 The Implementation of EFQM Excellence Model and the Outcomes

The implementation of EFQM excellence model in practice is widespread and accepted. Analytical studies on the casual relationship within the model of EFQM are extensive. However, there is limitation in the evidence that suggest that implementation of EFQM model leads to performance improvement (Boulter et al., 2013; Doeleman et al., 2014). The current studies are based mostly on descriptive studies that use lack of control group or single cases. Furthermore, past studies focused on isolated or partial relationship. Thus, the next section describes briefly the essential contribution to the literature on the empirical evidences of implementing the model of EFQM in terms of performance improvement. The study of Doeleman et al. (2014) is referred to for more detailed descriptions of this literature which contains detailed review on the topic.

Table 2.5
The Model of EFQM Result Criteria and Enabler Criteria and their Descriptions

Enabler Criteria	***Description***
Leadership	Leaders need to show their commitment to continuous improvement and excellence and provide adequate support and resources through involvement and improvement.
Policy and strategy	Policy and strategy involves the vision, mission, strategy and values of an organization, how these are developed, regularly

	improved and updated, implemented and communicated and how these reflect a total quality orientation.
Human Resources	Human resources is about the organizational management of people, how their potentials are fully released, how their capabilities are developed and sustained, their resources improved, how people are empowered, inovolved and recognized; and how performance is assessed continuously.
Resources	Resources mean how the organization's resources are utilized effectively in support of strategy and policy.
Process Control	Process Control means the identification, review and revision of the process in order to maintain the service continuous improvement in an organization.
Result Criteria	***Description***
Professionals	In regards to profession, comprehensively achieve and measure excellent results.
Customers	Comprehensively achieve and measure excellent results considering the customers.
Society	Extensively achieve and measure excellent results in accordance with the society.
Results (outcomes and costs)	Extensively achieve and measure excellent results in accordance with the results (Cost and Outcomes)

Source: EFQM (2013); Shergold and Reed (1996)

With the model's "result criteria" of TQM as shown in the Table 2.5, there is significant relationship where achievement in one are connected with improved results in other results criteria (Oakland & Oakland, 1998). Eskildsen and Kanji (1998) found that poor process and people management is indicated in two of the results criteria. Also, Prabhu et al. (2000) showed a strong relationship between the result criterion customers and enabler criterion leadership through good training assurance of the employees between operational outcome measures and people-related issues. Eskildsen and Kanji (2000) revealed that enabler criterion such s process control and human resources have positive correlation on the results criterion professionals.

The first to take into consideration all of the model's elements are Bou-Llusar et al. (2005) by hypothesizing the association between the enabler criteria and the result criteria; thereby making significant contribution to the complete understanding of the relationship set. It was found that there is strong association between result criteria and enabler criteria. Furthermore, the study showed that when all the model's criteria are simultaneously considered and a balanced approach in the enabler criteria development allows the relationship between the result criteria and enabler criteria to be increased as a positive enabler-result criteria correlation exist. This study did not take into account the long-term association between the result criteria and enabler criteria despite that an integrative approach is taken in this study.

Evaluating the long term impact of enabler criteria in accordance with the continuous improvement is a condition if conditions are to be mentioned on the contributions of the model of EFQM to business performance (Doeleman et al., 2014). In furtherance, it is apparent to believe that, the outcome of these implementations cannot be made visible if

measure at the implementation moment but only at a latter point in time as it can be assumed that, the implementation of TQM aspect does not have an immediate effect but before any effect is manifested only requires time

According to continuous improvement, Doeleman et al. (2014) stated that if premises are to be clearly stated on the contribution of EFQM model to business performance, long-term effect analysis of the enabler criteria is a prerequisite. In furtherance, it is understandable to think that, the implementation outcome if measured at the implementation moment will not be visible as it can be assumed that, the quality management implementation does not have an instant effect but requires time before any effect is manifested but only at a later point in time.

2.8 Related Theories

There are several theories that explain how organization make use of quality management to maximize performance such as organization and administrative theory, resources based view (RBV), progressive utilization theory (PROUT), contingency theory and institutional theory. The PROUT enhances economic self-reliance, cooperatives environmental balance, RBV explains an art of utilizing organizational resources for sustained sustainable performance and the organization and administrative theory explains rationalization of organization activities. The PROUT lacks practical value and relevance as clearly stated by Maheshvarananda and Branch (2010). Also the organization and administrative theory has a huge shortcoming for focusing more on structures and less resources (Acedo et al., 2006). The theory of contingency suggests that an organizational system's appropriateness depends on the conditions under which the specific organization operates (Burns & Stalker, 1961; Thompson, 1967; Dent, 1990).

Meanwhile, the institutional theory on the other hand states that social, economic, political and external factors affect the organizational decision-making and strategies of firms as legitimate practices are adopted in relation to stakeholders (Jennings & Zandbergen, 1995; North, 1990). The theory of contingency here has an edge over all other stated theories because it has the ability of capturing resources, structure and capability of an organization, and firm strategies and decision-making to attain sustained sustainable performance. It is on the basis of this argument that this study adopts the contingency theory as the major underpinning theory. Contingency and institutional theory are applied in this study to determine the moderator as organization create structures to look legalized to the important such as ISO 9000 and TQM as stated by institutional theory (Sila, 2007).

2.9 The Connection between this Study, Contingency Theory and Institutional Theory

Successful organizations employ process and structure characteristics that are suitable for the environmental uncertainty (Duncan, 1972; Miller et al., 1992). The environment is selected in this study for comparison of the relationships – the impact of environmental regulation and policy as moderator. In accordance with theory of contingency, one of the contingency factors that affect the selection of management strategies is environment (Doty et al., 1993). According to the reviewed literature, environmental regulation and policy is expected to have stronger association between TQM and sustainable performance (Ahmad et al., 2014). The theory of contingency proposes that organization that creates a strong link between environmental uncertainty and organizational structure will achieve high result in performance (Ellis et al., 2002). The organizational size, organizational strategy and the environment are considered as the contingencies (Miller

et al., 1992). Also, Contingency theory is of the opinion that no method or theory is applicable in all circumstances; this is simply means, there is no best way to manage, design or lead an organization as the business life is subject to various environmental influences and situation (Lau, 2014).

A theoretical lens is provided by the institutional theory through which the researchers can examine and identify the factors that enhance the legitimacy and survival of organization practices such as regulation (the legal environment inclusive), social environment, history and culture and economic incentives while acknowledging that there is importance in resources (Baumol et al., 2009; Lai et al., 2006; Roy, 1997). Traditionally, the theory of institution is concerned with how organizations and groups secure their legitimacy and positions in a better way by abiding by the rules (i.e. laws, regulatory structure, professions, courts, governmental agencies, other cultural and societal practices and scripts that exert conformance pressure) and the institutional environmental norms (DiMaggio & Powell, 1983; Meyer & Rowan, 1991; Scout, 2007).

By considering the issue of late and early implementers, institutional theory accounts for organizational homogeneity (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). In the analysis of TQM, there are many other authors who used institutional theory (Mueller & Carter, 2005; Sila, 2007; Staw & Epstein, 2000; Westphal & Shortell, 1997; Zeitz et al., 1999). This study focuses on the association between TQM practices and sustainable performance among food and beverage companies in Malaysia using environmental regulations and policy under environmental regulation and policy as the moderators. Institutional theory was chosen for this study to complement contingency theory because

it offers a theoretical connection between TQM and sustainable performance (Mueller & Carter, 2005).

2.10 Research Constructs and Measuring Dimensions

This is to conceptualize each of the constructs involved in this study's model with highlight of the explicit dimensions to be used in measuring each of the constructs. Constructs to be conceptualized are given the befitting metric as the direction of this study suggests are sustainable performance, Environmental regulation and policy and TQM. Under TQM, Quality assurance, and Continuous improvement process are the sub-variables.

2.10.1 Operational Definitions and Measuring Dimensions of Sustainable Performance (SP)

In this study, sustainable performance is defined as a dynamic process that requires achieving short-term performance (meeting present needs) without compromising the long-term performance (future needs) (Brent & Labuschagne, 2004; Horngren et al., 2011). Through emergence of new perspective, there are now three components of sustainability: the economic, environmental and social performance (Sezen & Cankaya, 2013). Generally, this perspective is referred to as triple bottom line (TBL). These three dimensions are accepted generally at the company level as descriptive of a performance of a company in sustainability.

2.10.1.1 Economic Performance

Economic sustainability performance is an evaluation of organizational return on assets, cost reduction, income improvement, market shares and profits on the economic performance goals (Green et al., 2012; Liu et al., 2012). Economic performance is

measured in terms of income, profit, tax, as well as taking care of employee's welfare financially (Zhu, Sarkis, and Lai, 2012).

2.10.1.2 Social Performance

Social sustainability performance is defined as an evaluation of organization on education and training, human resources development, social commitment and participation and healthy work environment (Teraji, 2009). According to United Microelectronics Corporation (2012), social responsibility includes talent development, staff relations, social concerns and responses, employee benefits, working conditions and public welfare support.

2.10.1.3 Environmental Performance

Environmental sustainability performance is the evaluation of organizational reduction for harmful materials, reduction in hazardous consumption or emissions and resources use or efficient energy (Junquera, Brío & Fernández, 2012). Environmental sustainability performance is an achievement in reducing the pollution emitted, waste generated and resource usage resulting from the undertaken efforts (Brent' & Labuschagne', 2004).

2.10.2 Operational Definitions and Measuring Dimensions of TQM

Baird et al. (2011) argued that TQM is a managerial philosophy with systematic approach of managing quality purposely established in achieving high performances in term of customer satisfaction, finance and production achievement which requires commitment from the company leadership by adopting effective core quality elements (quality assurance and continuous process improvement) to develop a productive and sustainable environment, which expedites the continuous improvement for all agro-allied processes

and activities. Although there are many disputations and inconsistencies on what comprises TQM practices as extensively discussed in many previous studies (Stanciu, Constandache & Condrea, 2014; Sahai & Srivastava, 2012; Rodrigue, Magnan & Boulianne, 2013). However, in this study, TQM practice is defined as the management approaches of an organization centred on quality aiming at long-term success and sustainable performance based on the participation of all its members (Iyer, 2018) through human resource management, (HRM), service design (SD), information and analysis (IA), continuous process improvement (CP), benchmarking (BM), quality assurance (QA) and management leadership (ML) and benefits to all levels and members of the industry (Brah et al., 2002). The operational definitions of the quality management practices and their attending dimensions are discussed below:

2.10.2.1 Management Leadership

Management leadership is the leadership and personal involvement of senior executives in setting out and building strategic direction and maintaining a leadership system that are important to facilitate individual development, culture of commitment, high organizational performance and organizational learning and quality (Brah et al., 2002). This includes developing and communicating a vision for securing engagement, motivating people and for the future. The capability of management to actualize a collaborated effort depends on the ability of the leadership (Obiwuru, Okwu, Akpa & Nwankwee, 2011).

2.10.2.2 Benchmarking

Benchmarking the process of continuity, with the purpose of measuring products, procedures and services against the best leading competitors in a given industry; the

purpose is to procure the necessary information for a company to become the best among the competitors (Saunders, Mann & Smith, 2007; Shabunko, et al., 2014; Stewart, 2010). According to Brah, Wong and Rao (2000), benchmarking is conceptualized in terms of best practices (e.g. capital investment and employee productivity, inventory control, liquidity control and cost control) identification that contribute to organizational sustainable performance, achieving better position, examining and identification of best practices.

2.10.2.3 Continuous Process Improvement

Notably, continuous process improvement is one of the commonly discussed elements of TQM in literature (Intra & Zahn, 2014). Continuous process improvement has been proved to be a very effective tool in organization (Krittanathip, et al., 2013). Continuous process improvement which is also referred to as continuous improvement is an ongoing effort to improve processes at all levels, improving the services and products and programs provided and to reduce overall time, inspect quality control and to statistically control process charts (Brah, Wong & Rao, 2000). Organizations are now employing this philosophy as it seeks improvement incrementally over time or breakthrough improvement all at once. This study encapsulates the associated efforts of continuous process improvement under the use TQM to impact sustainable performance. Quality of processes, company products and services and effective feedback system (Adina-Petruţa & Roxana, 2014 ; Jonsdottir, Ingason, & Jonasson, 2014; Barber, Munive-hernandez, & Keane, 2006) are used as sub-variables of continuous improvement process.

2.10.2.4 Service Design

The activities of organizing, planning communication, people and material components of a service to improve the interaction and quality between the customers and service provider is called service design (Anderson et al., 1994; Flynn et al., Llorens-Montes & Verdu-Jover, 2004). With good service design, TQM is in a suitable position to enhance the service performance from different dimensions. Accordingly, service design is operationalized as one of the critical factors of TQM implementation that improves the processes in an organization which reflects in cost reduction of quality such as rework, late delivery and scrap, through review before marketing and functional department in the design team, review of design and critical examination of new processes (Brah, Wong and Rao, 2000). Thus, an organization can offer suitable service design that leads to increase in the satisfaction of customer, increase in business profitability, better work process and reducing the time waste.

2.10.2.5 Human Resources Management

HRM is the management of human resources which is developed to optimize employee's performance in the service of the strategic objectives of an employer (Kekale & Kekale, 1995). Primarily, HRM deals with the management of people by focusing on the systems and policies within an organization. When implementing TQM, employee should be encouraged to involve in decision-making, problem solving and financial success of the organization (Yusuf et al., 2007). HRM is an element of TQM strategy that includes employee empowerment, employees' involvement and employee's training (Ahire et al., 1996; Brah et al., 2002).

2.10.2.6 Quality Assurance

Basically, quality assurance is the sustenance of a desired point of service and product quality in particular by means of sensitive attention in every stages of the processes of production and delivery. Quality assurance involves assessment procedure and systematic management used to ensuring achievement of improved quality and quality output. Thus, this study employed: training and solving problems, management of operations, products and focus on best practice achievement, quality relationship between different department and value-added as the measurement to examine quality assurance in Malaysian food and beverage companies (Brah et al., 2000).

2.10.2.7 Information and Analysis

Information and analysis (also known as data analysis or data analytics) is a process of modelling, transforming, cleansing and inspecting data with the aim of detecting relevant information that support decision-making and suggest conclusion (Ahire et al., 1996). In this study, information and analysis evaluates how effective measurement system for improving and gathering data, process and product quality and understanding performance thorugh employee satisfaction is provided at all parts and levels of the organization (Brah et al., 2002). In the revolution era of information and communication, the key factor for an effective performance is the importance of information and analysis (Saraph et al., 1989).

2.10.3 Operational Definition and Measuring Dimensions of ERP

Several attempts have been made from past studies to conceptualize ERP such as, Bracci and Maran (2013) and Dutta, Lawson and Marcinko (2013). Moreover, one thing that appeared to be very common in those interpretations is that they referred to ERP as an

important policy and requirement that covers two issues: pollution control; and regulation of how much pollution such as undesirable materials and chemicals in achieving sustainable performance. This has made many organizations to consider it as a necessity with the rate at which environmental regulation and policy improves sustainable performance through environmental management (Krechovská & Procházková, 2014). The fact that different organizations adopt environmental regulation and policy for different purposes shows that it could be measured differently. This study from its scope uses environmental policy and environmental regulation (Santos-Reyes & Lawlor-Wright, 2001; Daily & Huang, 2011; Muhammad, 2011; Leshinsky, 2012) as dimension to moderate between TQM and sustainable performance.

2.10.4 Operational Definition and Measuring Dimensions of Organizational Excellence

The literatures on organizations contain many definitions of excellence as a construct. Hillman (1994) stated that excellence assessment is the system of giving a firm an evaluation on a continuous improving model in order to understand which improvement is needed and what has been achieved. Excellence is defined as "outstanding practice in managing the organization and achieving results-all based on a set of nine fundamental concepts, viz, result orientation, customer focus, leadership and constancy of purpose, management by process and facts, people development and involvement, continuous learning, innovation and improvement, partnership development and public responsibility" according to the EFQM guidelines, 1999. Organizational excellence is defined by Darling and Nurmi (1995) as an intentional and reasonable introduction, strengthening and creating of change to improve organizational efficiency. However, in this study, organizational excellence is defined as a quality process of practices aimed to

enhance organizational effectiveness, the work flexibility, its competitive position and the users' participation in each department of the organization to work together through the understanding of all the activities, working on error removal and process improvement towards achieving excellence (Al Shobaki & Naser, 2016). Thus, this study focuses on the items from Darling and Nurmi (1995) and Pinar and Girard (2008) with three dimensions for organizational excellence: committed people, customer focus and constant innovation.

2.11 Development of the Theoretical Framework

The past studies are used to develop the framework of this study as reviewed above on theoretical and managerial issues. For more investigation on the relationship between the research variables, a well-defined and supportive gap was found between the variables. From the last chapter, some variables are discussed with sustainable performance separately and the relationship between other variables.

Using the past literature review comprising the relationship between the variables under investigation, the framework of this study is constructed. The direct relationship between dependent and independent variables are separately studied. In addition, some relationship in the previous researches between dependent, independent, mediating and moderating variable are examined. The past literature lack the joint examination of the impact of ERP, organizational excellence and TQM on sustainability performance.

Unlike sustainability performance, the roles of organizational excellence has been neglected. The relationship between organizational excellence and sustainability performance is limited in the past literature with no clear definition (Pinar & Girard,

2008). The results revealed a gap that should filled in this study. In furtherance, there is still lack of study in the relationship between organizational excellence and sustainability performance; some of the studies found positive and significant relationship between the variables (Antony & Bahattacharyya, 2010; Oocharoen & Ussahawanitchakit, 2008; Pinar & Girard, 2008).

Therefore, more researches are necessary to fill the gap due to limitations in the past studies. This present study is an effort to fill the void by adding the relationship between organizational excellence and sustainability performance to the studies especially in the context of Malaysia as a developing country.

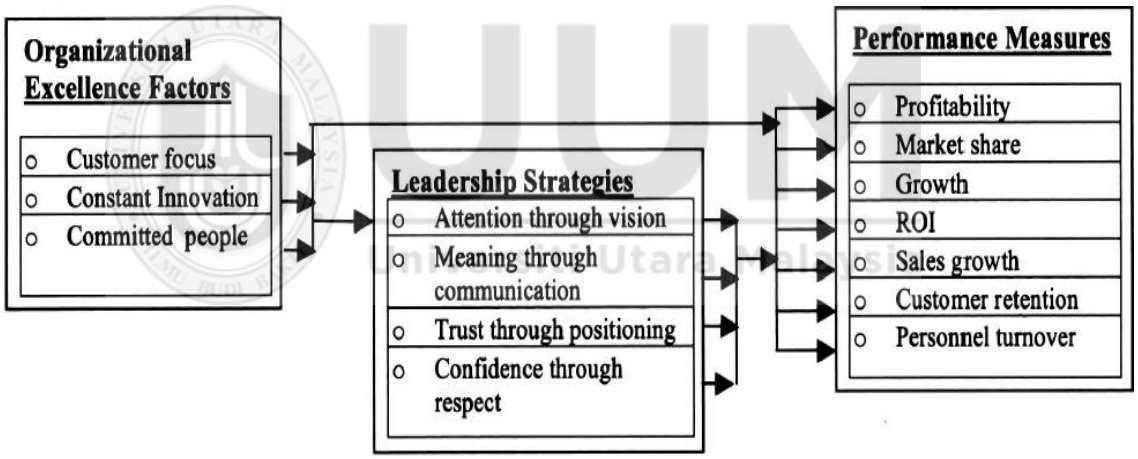

Figure 2.6
The Effect of Leadership Strategies and Organizational Excellence on Business Performance
Source: Pinar and Girard, 2008

As presented in Figure 2.6, the framework of the research is formulated using the study of Pinar & Girard (2008) with the mediating effect of organizational excellence while testing the relationship of leadership strategies and organizational excellence with organizational performance. The study of Al-Dhaafri et al. (2014) also examined the mediating effect of organizational excellence and TQM between enterprise resource

planning and organizational performance. The result found that organizational excellence fully mediates the relationship between the variables. The mediator shows the occurrence of a given effect. Additionally, the mediator is achieved through the independent variable which then leads to the result (Shadish & Sweeney, 1991). As early stated, organizational excellence is achieved through TQM while sustainable performance is achieved through organizational excellence. In Figure 2.1, how business or organizational excellence is achieved with TQM is explained by the framework of Ionica et al. (2010).

There is also another gap in the association between TQM and sustainability performance. Previous studies showed that, there is significant and positive relationship between TQM and sustainable performance (Demirbag et al., 2006; Talib, Rahman & Qureshi, 2013; Wang, Chen & Chen, 2012; Zehir, Ertosunb, Zehir & Muceldelli, 2012). Some studies however did not find any significant relation between the variables (Davis, 1997; Kober, Subraamanniam & Watson, 2012; Powell, 1995; Westphal, Gulati & Shortell, 1996). A research gap is created from the inconsistent results that prompted a future research by introducing new variable that may better explain the relationship in another way. To achieve this purpose in this study, organizational excellence is proposed as a mediator in the association between TQM and sustainable performance. Many researchers have studied the relationship between excellence, TQM and performance but the current framework of this study is developed from the study of Mele and Colurcio (2006).

Organizations need an affective system that can integrate their processes within their boundaries and others in this continuous changing environment. This shows that, information technology has become a critical factor for every organization to achieve competitive advantage, business performance and sustainability. As stated by some

researchers, ERP is considered a significant innovative (Jha & Joshi, 2007). However, ERP can improve sustainability performance and add values to organizations (Davenport & Brooks, 2004; Irani, & Love, 2001; Kamhawi, 2008; Kale, Banwati & Laroiya, 2010), it can also affect the performance negatively (Hunton, Lippincott & Reck, 2003; Velcu, 2007; Wieder, Booth, Matolcsy & Ossimitz, 2006). These inconsistencies and inconclusiveness due to some critical success factors represent a research gap that needs further investigation. The relationship between ERP and sustainable performance in this study as mediated by organizational excellence can explain why and how this relationship happens. For the purpose of including ERP in this framework as moderating variable in this study, Dutta, Lawson and Marcinko (2013) study was employed. Also, the moderator variable changes the association between dependent and independent variables. It either changes the form of the relationship or changes the strength of the relationship. In addition, when there is an unexpected inconsistent or weak association between a dependent and independent variable, a moderator variable is introduced. This therefore justifies why ERP is introduced as a moderator.

Abiding by the rule and regulation of environment is considered as one of the most important strategies for growth and survival (Sila & Ebrahimpour, 2002). Managers and leaders of an organization that comply with ERP can affect the performance positively than the others who do not comply with the laws. There is high significant number of literature review that examined the association between ERP and business performance in respect to social, economic and environmental performance but there is no consistency. Some authors argued that the inconsistences in the results are due to direct relationship rather being a moderator which can explain the relationship better (Harms, 2013; Vij &

Bedi, 2012). Similarly, organizational excellence as an organizational activity has the capacity to play the mechanism role and mediate the relationship in order to give more explanation. In addition, environmental regulation and policy is needed to increase awareness among the companies in the industries.

In other words, ERP is used as the tool that will give a solution the questions *how* and *why* the occurrence in the association between TQM and sustainable performance. The moderator is the mechanism that explains the dependent and independent variables in reference to their association (Baron & Kenny, 1986). The moderation causing the indirect effect in examined and related to the direct effects. The direct effect through ERP is examined as a result of result inconsistencies of the direct effect between sustainable performance and TQM. The goal of the organization is to have TQM and subsequently adopt it to achieve business excellence (McAdam et al., 1998). Moreover, excellence practices and models are based on the principles of TQM that can achieve high level of sustainable performance (Ioncia, Baleanu, Edelhauser & Irimie, 2010).

Similarly, several authors have used different dimensions to measure TQM which lead to different results. The inconsistency in their results therefore calls for further studies. The Table 2.6 below presents the measurements of the main constructs of the study.

Table 2.6
The Study's Main Constructs and their Measurement

Construct	Measurement	Author
TQM	Process Management, Philosophy Development, Benchmarking, Quality Measurement, Information Analysis, Employee Empowerment,	Foster, (2007); Powell, (1995)

Commitment and Leadership, Supplier quality management, Top management, training and Customer Satisfaction and Involvement	
Continuous and process Improvement	Dean & Bowen (1994); Grant, Shani, & Krishnan, (1994); Shiba, Graham, & Walden, (1993)
Continuous Process Improvement, Customer Focus and Total Involvement or Universal Responsibility	Walsh , Hughes & Maddox, (2002)
Degree of Leadership and Top Management Support and Commitment	Hendricks & Singhal (1997)
Comparison, Measurement and Best Practice Identification, Improvement and Implementation	Anand & Kodali (2008)
Benchmarking, Leadership, Top Management Support, Team Building and Problem Solving, Continuous Improvement, Supplier Quality and Relationship, Employee Empowerment, Organizational Culture, Use of Information Technology and Employee Involvement	Prajogo & Sohal (2004)

Leadership, Strategic Planning, Process Management, Resources Management and Results	Abu-Hamatteh et al. (2003)
Customer Focus, Process Management, Human Resources Management and Continuous Improvement	Isaksson (2006)
Management leadership and commitment, continuous improvement, customer-based approach, quality planning and management-based on facts,	Tarí (2005)
Employee Empowerment, Customer Satisfaction and Data Driven Policy Decision	Kannan & Tan (2005)
Requirement of the Customers, Continuous Improvement, Constant Result Measurement, Increased Employee Teamwork and Involvement, Team-based Problem Solving, Competitive Benchmarking, Good Intimacy with Supplier, Long-ranged Thinking and Work Reduction	Agus & Hassan (2011)
Quality Reporting and Data, Product and Service design, Process Management and supplier quality management	Baird et al. (2011)
Philosophy, Vision, Strategy, Aptitude, Resources, Rewards and Organization	Sallis, (2002); Militaru,

		Ungureanu, and Creţu (2013)
Sustainable performance	Economic Sustainable performance, social sustainable performance and Environmental sustainable performance	Chen et al. (2010)
	Environmental protection, economic growth and social cohesion	Pei, Amekudzi, Meyer, Barrella, & Ross, (2010)
	Economic Sustainability, social sustainability and Environmental sustainability	Brent & Labuschagne (2004).

Furthermore, the studies of Isaksson (2006), Reed, Lemak and Mero (2000), Schaltegger and Wagner (2006) and Zink (2007) are used to develop the framework of this study. The association between TQM and sustainability performance is analyzed in the studies with inconsistent results. The prompted this study to add variables both moderating and mediating for more researches in this context. The Figure 2.7 and 2.8 below present the previous frameworks of Issaksson (2006) and Stanciu (2013) respectively linking TQM and sustainable performance together.

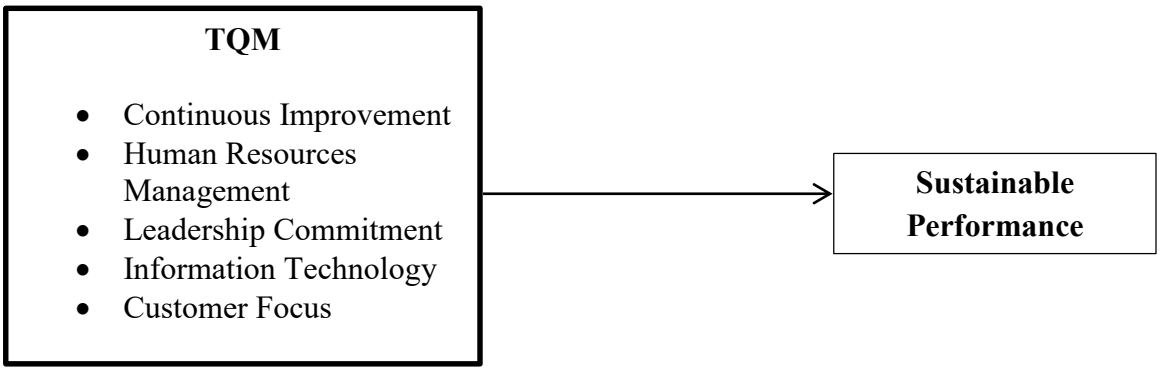

Figure 2.7
Previous Framework of TQM and Sustainable Performance
Source: Isaksson, 2006

Figure 2.8
Past Framework of TQM and Sustainable Performance
Source: Stanciu, 2013

In all these views of scholars about TQM approaches, it was evidently established that TQM practices required team work, quality planning, quality training, continuous improvement process, management commitment, focus on customers, benchmarking, quality assurance, "focus on processes" and prevention. Some of all these elements are equally regarded as the core of TQM elements in this study.

The Figure 2.9 presents the proposed model using four variables: TQM; Environmental Regulation and Policy Organizational; Excellence and Sustainable Performance. The gap is revealed in the past studies from the above discussion and from the relationship between the variables. Thus, a theoretical framework is generated as prompted by the motivation from the gap of the study. Therefore, in relation to the past studies, the present research

proposed: TQM represents the independent variable; ERP as the moderating variable; and sustainable performance as the dependent variable; and organizational excellence as the mediator.

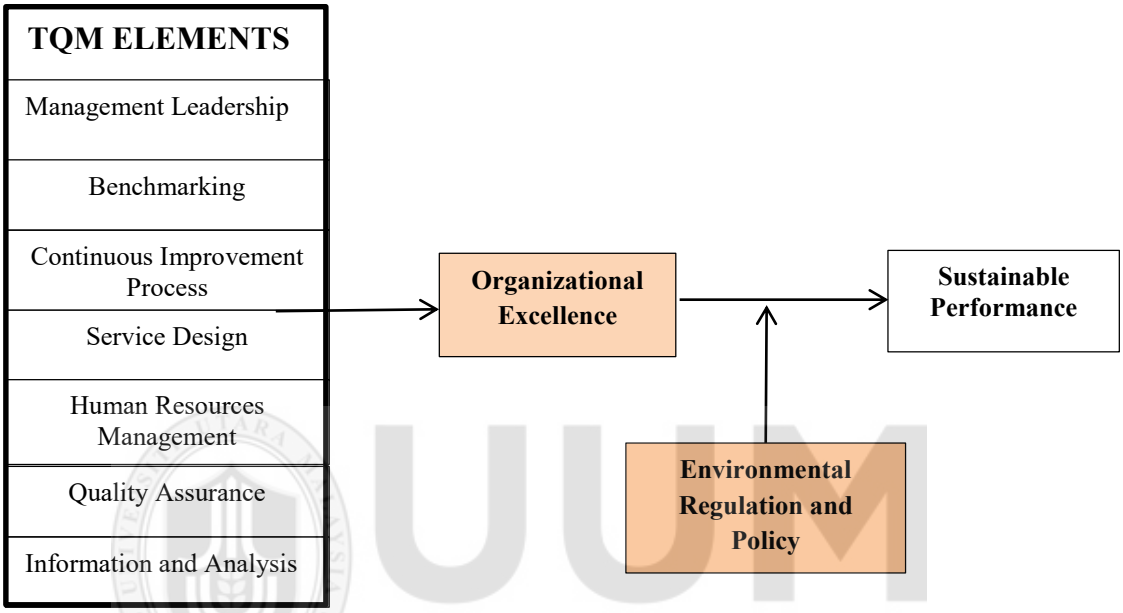

Figure 2.9
The Research Model of TQM Elements, Environmental Regulation and Policy Organizational Excellence and Sustainable Performance

2.12 Hypothesis Formulation

According to the comprehensive literature review, the hypotheses of this study were formulated according to the research questions and objectives that have been discussed in the first chapter. The process of the hypothesis development is discussed in the following sections.

2.12.1 TQM- Management Leadership and Sustainable Performance

In the study of relationship between TQM and performance, some researchers have emphasized that TQM as a single construct can be studied (Terziovski & Samson, 1999).

Other researchers such as Dow et al. (1999) and Powell (1995) reported that only some of the practices of TQM lead to positive relationship with sustainable performance (Khairul Anuar, 2002; Yasin et al., 2004). According to Hendricks and Singhal (2001), the two mixed results showed that several TQM constructs have significant impacts on sustainable performance.

Many quality experts have argued that the key successful management of quality starts at the top management of the organization (Lakshman, 2006). Management leadership is considered to be one of the prominent components of TQM strategy (Harrington & Williams, 2004). Different dimensions of TQM are identified by many scholars (Ahire et al., 1996; Powell, 1995). For instance, seven dimensions of TQM was identified by Sila and Ebrahimpour (2005) namely, human resources management, strategic planning, leadership, process management, supplier management, customer focus and information and analysis. The authors found that from all the factors, leadership and information analysis has the greatest effects. In the implementation of TQM, effective leadership can create strategies, mission statement and clear vision to support the mission (Yusuf et al., 2007). Additionally, Oakland (2011) stated that strong leadership is required by the TQM and the improvement of overall sustainable performance is the greatest tangible advantage of excellence in leadership.

Furthermore, for developing and supporting organizational culture, the role of top management is very critical based on the effective training, participative decision making process, teamwork spirit and effective communication (Koehler & Pankowski, 1996). The absence of leadership commitment and top management is considered as the major reason for 80 per cent of failure in TQM (Thiagarajan, 1997).

Summarily, past studies on TQM practices empirically analyzed the relationship between management leadership and sustainable performance (Arawati, 2005; Valmohammafi, 2011; Yasin et al., 2004). Therefore, the hypothesis was proposed as follow:

Hypothesis 1a: TQM-Management leadership has a positive and significant effect on sustainable performance

2.12.2 TQM-Benchmarking and Sustainable Performance

Some organizations used benchmarking strategy to make comparison among themselves on their performance to other leading and successful competitors in the market. It should be clearly understood that the basis of benchmarking practice is to analyze the products, services and techniques that are employed and produced by other competitors either within other industries or the same industry to achieve competitive advantages (Ahire et al., 1996). Thus, in benchmarking practices, cost savings, process efficiency and customer and employee satisfaction are some criteria that can be applied.

The significant relationship between benchmarking and sustainable performance has been reported by few scholars (Arawati, 2005; Christos et al., 2010; Terziovski & Samson, 1999). Dowe et al. (1999) however posited that some factors of TQM such as benchmarking advanced manufacturing technologies, closer supplier relationship and team work do not contribute to quality results.

Based on the above-mentioned submission, the following hypothesis is to be tested empirically:

Hypothesis 1b: TQM-Benchmarking has a significant and positive effect on sustainable performance

2.12.3 TQM-Continuous Process Improvement and Sustainable Performance

The main objective of TQM Practices is to satisfy customers through continuous process improvement at all levels of organization (Benavent, Ros & Moreno-Luzon, 2005). Every organization should create continuous improvement practice to cover all types of organizational process which include management activities and styles (Benavent et al., 2005). Fundamentally, the expected end result of any organization is to achieve a high level of customers' satisfaction (Baker, 2003).

Dean and Bowen (1994) added that, the drivers of continuous improvement are critical innovation and quality-conscious customers. There are many factors such as HRM, efficient information system and top management support in order to enhance and support continuous improvement practice in organization (Escrig-Tena, 2004).

Some past studies showed positive effectiveness of continuous improvement of long-term productivity and competitive position of an organization (Yusuf et al., 2007) and business performance (Christos et al., 2010; Lakshman, 2006; Powell, 1995). Nevertheless, Burli, Kottursheltar and Dalmia (2012) found that supplier management, management support and continuous improvement are not significantly affecting sustainable performance. Due to these contradictory results, the following hypothesis shall be empirically tested:

Hypothesis 1c: TQM-Continuous process improvement has a significant and positive effect on the sustainable performance

2.12.4 TQM-Service Design and Sustainable Performance

Service design as one of the TQM factors is more related to customer. By improving reputation and customer satisfaction, service design in organization positively contributes

to the performance (Lakhe & Mohanty, 1995). TQM of an organization can enhance the service performance in different dimension with good service design. Additionally, service design leads to process improvement in every organization that will reflect in reduction of cost of poor quality like scrap, rework and late delivery. Therefore, when organization offers suitable service design, it can result to increased satisfaction of the customers, better work process and increase response time and subsequently increase profitability in business. All the participants of TQM are encouraged by TQM to involve in the design process to achieving optimal design in order to satisfy the requirement of the customers (Dewhurst et al., 1999). The study posits that before production and marketing, new service design have to be reviewed in order to clear requirements and satisfactions.

In TQM literature, it is reported that there is a significant relationship between service design and sustainable performance (Flynn et al., 1995; Llorens-Montes & Verdu-Jover, 2004): In relation to that, the following hypothesis to be empirically tested is proposed:

Hypothesis 1d: TQM-Service design has a positive and significant effect on sustainable performance.

2.12.5 TQM-Human Resources Management and Sustainable Performance

Human resources management (HRM) is a practice under TQM strategy that comprises employees' involvement, employees' training and employees' empowerment (Ahire et al., 1996). Employees should be motivated to participate in financial success, decision making and problem-solving of the organization (Yusuf et al., 2007). This implies that everyone is capable to participate in the organizational business and to know the present

and future situation of the organizational financial success. Employees can participate through this knowledge more closely in the core business and involve in positively contributing to the sustainable performance of the organization.

Hence, all the employees in the organization are motivated by the TQM strategy in order to be closer to the goals and objectives of the organization (Collard, 1989). In TQM strategy, HRM is an important factor. Therefore, TQM model that includes HRM should be designed by organizations to assist employees in accepting and successfully implementing TQM (Kekale & Kekale, 1995). In addition, Akdere (2006) stated that through the support of employees, TQM practices positively related to organizational competitiveness.

An organizational culture change is needed for development and TQM practice implementation in any organization to assist the employee in accepting and adopting TQM model. As the employees are the live asset of any organization, they are expected to add value to the organization if they get enough empowerment, involvement in teamwork and training and can be considered as the main successful drivers for implementation of TQM process.

Literature review of TQM showed that, there are numerous studies that stated that there is positive relationship between HRM and sustainable performance (Arawati, 2005; Powell, 1995; Yasin et al., 2004). Therefore, considering the discussed literatures above, hypothesis was proposed for an empirical testing as follow:

Hypothesis 1e: TQM-HRM has a significant and positive effect on the sustainable performance.

2.12.6 TQM-Quality Assurance and Sustainable Performance

TQM-quality assurance involves the concept of assessment procedures and systematic management used to achieve improved quality and quality outputs. Quality insurance based on clarification and comprehensive review is conceptualized around three sequential non-linear stages namely: planning and analysis, design and prototype; production; and post production and delivery (Abdous, 2009).

Toremen, Karaku, and Yasan (2009) posited that in TQM, the responsibility for quality is found both in the team and in individuals through some developmental processes which stands for an approach to quality assurance to be more accordant with the fundamental ethics and structures of educational organization than many of the more hierarchical and mechanistic processes. Procedures for quality assurance on goods and services have grown perpetually in accordance with the technological and socio-cultural changes that have marked the societal rapid evolution (Catalin, Bogdan & Dimitrie, 2014). Tran, Cahoon and Chen (2011) explained that ISO was developed from quality assurance; quality assurance enabled the occurrence of quality management during the new-product development process and focused on continuous improvement as a key quality management practice.

In understanding quality assurance, Lim (2008), conducted a cross-country case study research on the quality assurance concept. The aim of the study is to evaluate the dynamics of policy implementation of quality assurance across and within institutions for an offshore degree. Interviews were conducted and data were obtained from a private university college of business school in Malaysia which is a major exporter of higher degree in education and its offshore business partner. The study revealed that there is high

reliance on the university as quality assurance may not be healthy when the implementation of the policy of the university is having internal challenges.

In a few words, quality assurance is conceptualized in terms of systematic approach, a type of practice in quality management that involves primarily in establishing standards and procedures for quality (Cukier et al., 2012); a provided activity to all concerned, the proof required to create confidence that there is proper performance of the quality function (Lau & Tang, 2009; Law, 2010; Timothy, 2008; Mergenthaler, Weinberger & Qaim, 2009; Moldovan, 2012; Moore, et al., 2007; Rady , 2005; Seip, Frich, & Hoff, 2012; Manorama & Jeevan, 2009). Therefore, from the results of the previous studies, the hypothesis below is proposed:

Hypothesis 1f: TQM-quality assurance has a significant and positive impact on sustainable performance.

2.12.7 TQM-Information and Analysis and Sustainable Performance

The information system is one of the crucial factors that positively contribute to the success in TQM implementation (Ahire et al., 1996). It is an integration of people, hardware and procedure and software (Kartha, 2004). Information and analysis is one of the key drivers for an effective performance in this era of communication and information revolution (Saraph et al., 1989). Additionally, the authors posited that an organization can significantly react to rapid changes in a business environment if the organization has an appropriate information system. This is due to effective data collection, data presentation and data dissemination.

There are many researchers in the past literature that found significant association between quality information system and sustainable performance (Ahire et al., 1996; Powell, 1995; Sila & Ebrahimpour, 2005). In contrast, Samson and Terziovski (1999) found that hard TQM factors like process and planning management and information and analysis are neither negatively related nor significantly related. In addition, Sila and Ebrahimpour (2005) found that information and analysis has indirect effect only on business outcomes. In other vein, information and communication does not have any significant impact on the market orientation as Samat, Ramayah and Saad (2006) examined the association between TQM and market orientation. Due to results of discrepancy in the past studies, the following hypothesis was proposed:

Hypothesis 1g: TQM-Information and Analysis has a positive and significant effect on sustainable performance

2.12.8 Environmental Regulation and Policy and Sustainable Performance

Only a few researchers have studied the relationship between ERP and OP despite the global view of the impact that environmental rules and regulation can have on an organization; thereby determining its performance (Aigner & Lloret, 2013). The perception on the possible impact of ERP on sustainable performance is derived from the ERP ability to create pro-active environmental system (Bracci & Maran, 2013). This has made ERP to be identified as strategic resources in the design and application for organizational strategies. Dam and Petkova (2014) equally posited that ERP is related to performance directly. Therefore, establishing all these effects of ERP on sustainable performance makes it incomplete to study sustainable performance through TQM without considering ERP in this information communication era.

AbdRahman and Rasyikah (2010) evaluate the role of Malaysian policy issues and law and sustainable development. It is reported from the study that in order to reduce the effects of global warming and to ensure sustainable development, there is a big role for Malaysia to conserve its natural resources. The study aimed to recognize the hampering and enabling structure for good policy in Malaysia on sustainable water resources management. It is concluded that the division of power and fragmented laws over water resources management can hinder the actualization of sustainable policy in the country.

Additionally, Gadenne, et al. (2012) examined the effect of sustainability performance management practice on organizational sustainability performance in Australia. Using a mailed printed questionnaires to obtain data from 314 medium to large organizations and personal interview with 20 senior executives, the findings revealed that eight sustainability performance management practices (SPMP) was applied by organizations to enhance seven different sustainability performance indicators (SPIs) namely information capital performance, employee value, financial performance, new product development, customer value, environmental and social responsibility.

Thus, from the results of the past studies, the hypothesis below is proposed:

Hypothesis 2: Environmental Regulation and Policy has a significant and positive impact on sustainable performance.

2.12.9 Organizational Excellence and Sustainable Performance

The most important measurement indicators for any organization's advancement, competitiveness, success, development and achievement are organizational excellence and sustainable performance. While every one of the leads to another, yet they are still

interrelated; however, achieving organizational excellence as a practice that comprises innovation leads to sustainable performance. The EFQM states that organization with performance of 60 per cent and above is considered as excellence organization. According to Antony and Bhattacharyya (2010), the current models of excellence consider excellence to be outstanding level of performance. How organization can sustain and achieve competitive advantages and how they can pursue business excellence in the field of business performance are the basic questions (Dahlgaard & Dahlgaard-Park, 2006; Watson, 2003).

Due to this, Harrington (2005) reported that organizational excellence is a holistic approach that enhances sustainable performance. Furthermore, organizational excellence has significant relationship with firm performance (Ooncharoen & Ussahawanitchakit, 2008). Additionally, Pinar and Girard (2008) made an empirical study on 200 Turkish firms and found that, there is significant association between organizational excellence and performance. Therefore, the hypothesis below is proposed based on the previous discussion:

Hypothesis 3: Organizational Excellence has a significant and positive impact on sustainable performance.

2.12.10 Organizational Excellence as a Mediator between Management Leadership and Sustainable Performance

Generally, excellence when linked to TQM implementation takes different shape in several aspects such as leadership management and coherence with objectives, continuous improvement in terms of facts and processes, orientation to customers and results, learning and public responsibility, innovation and development of partnership (Mele &

Colurcio, 2006). It is argued that excellent position is achieved by an organization when it has the capability of leading to sustainable performance and the optimum value with respect to competitors.

In addition, organizational excellence is a key stage on the journey of management leadership (McAdam, 2000). From the history, the word excellence is still unclear till 1982 when Peters and Waterman published a book on it (Kanji & Sa, 2007). The authors reported that excellence directly became related to levels of performance. Furthermore, in the results from their literature review on implementation of TQM elements for manufacturing excellence, Sharma and Kodali (2008) developed a model for implementing sustainable manufacturing excellence from comparative analysis of other TQM models. The study found that the framework is categorized into three namely: a consultant-based, an academic- or research-based or award-based. Thus, the hypothesis below is proposed:

Hypothesis 4a: Organizational excellence mediates the relationship between management leadership and sustainable performance.

2.12.11 Organizational Excellence as Mediator between Benchmarking and Sustainable Performance

Recently, organizational excellence has emerged to have similar interpretation to business excellence except that it is applicable in public sector organization more (McAdam, 2000). The main objective of all organizations is excellence – excellence being considered as a result of innovative and creative implementation of strategy such as benchmarking and its way path to the way competitive advantage and success (McAdam, Armstrong &

Kelly, 1998; Vora, 2002). Benchmarking is one of the main factor that promote organizations to achieve business excellence through TQM (Mele & Colurcio, 2006).

In contribution, Kanji (1998) studied the measurement and individual features of excellence features while measuring the satisfaction of stakeholder to obtain a detailed analysis of the sustainable performance. Additionally, organization's goal is not to have TQM only in itself but to adopt it as a managerial method through benchmarking in the achievement of sustainable performance (McAdam et al., 1998). Therefore, the study proposed the following hypothesis:

Hypothesis 4b: organizational excellence mediates the relationship between benchmarking and sustainability performance.

2.12.12 Organizational Excellence as a Mediator between Continuous Process Improvement and Sustainable Performance

According to Adebanjo (2001), quality improvement and business excellence complement each other. Most excellence models such as EFQM comprises continuous process improvement are according to the concepts of TQM as a holistic approach and some of the quality models have been moved to excellence such as EQA, now referred to as EFQM excellence award (Adebanjo, 2001).

Considering the public sector, the difference between TQM and excellence is most apparent where there are attempt to include the concept of TQM into the public sector but there is no proof that it was successful (Cairncross, 2000). From this discussion, it is safe to conclude that quality management through continuous improvement can enhance organization to achieve excellence (Hassan et al., 2007; Lee, 2002). In another vein, excellence practices and models in accordance with the principles of TQM can lead to

high sustainable performance level (Ioncia & Baleanu, 2010). Therefore, the study proposed the following hypothesis:

Hypothesis 4c: organizational excellence mediates the relationship between continuous process improvement and sustainability performance.

2.12.13 Organizational Excellence as a Mediator between Service Design and Sustainable Performance

Service design helps organization in integrating and automating corporate cross-functions such as finance, project management, distribution, inventory and procurement and to improve the business performance (Mabert, Soni & Venkataramanan, 2000; Tarn et al., 2002).

Few years ago, service design has been advanced to attain a level of planning system that can contain the entire organization to development of product from marketing and to attain organizational excellence through integration (Mabert et al., 2000). Additionally, the existing system lacks integration of different functions of the organization where the core system such as the service design requires all component working together to acquire excellent performance (Tarn et al., 2002). Also, using Six Sigma in addition to service design enhance implementation of best business practice with the goal of accomplishing excellence in business processes (Rao, 2008).

Baron and Kenny (1986) stated that the mediating construct is the mechanism that explains the relationship between independent and dependent variables. Thus, the indirect effects through the mediator is compared and examined with the direct effects. Due to the inconsistencies in the results of the direct effects between service design and sustainable performance, the indirect effect is examined through organizational excellence.

Moreover, organizational excellence is considered a practice that supports organization to achieve excellence to grow (Attafar et al., 2012). Masli et al. (2010) stated that to generate best results, there must be demonstration of excellence in information technology. Due to the inconsistency in the results between sustainable performance and service design, organizational excellence is introduced as the mechanism to mediate the relationship. Therefore, the study proposed the following hypothesis:

Hypothesis 4d: organizational excellence mediates the relationship between service design and sustainability performance.

2.12.14 Organizational Excellence as a Mediator between Human Resources Management and Sustainable Performance

The impact of human resource management on sustainable performance has been discussed by some scholars just of recent. The next question to be asked is, how does human resources management enhance performance and what how does this effect is explained. Therefore, these questions are to be answered with the emergence of organizational excellence. It is therefore proposed in this study to serve as mediator between sustainable performance and human resources management. As earlier mentioned, the association between organizational excellence and human resources management in one hand and the relationship between organizational excellence and sustainable performance at another end were hypothesized to have significant relationships as last literature approved the association between the variables. Additionally, the indirect human resources management-sustainable performance is more prominent than the direct relationship (Lau & Zhang, 2006). From another perspective,

the association between human resources management and sustainable performance is not direct; therefore, other elements can affect the relationship (Vij & Bedi, 2012).

Other mediators between human resources management and sustainable performance which may explain the relationship such as organizational activities was opined by Lumpkin and Dess (1996). According to Harms (2013), there are only past studies that investigated the mediating effect of human resources management-performance relationship. The findings revealed that at least partial mediation which shows that there is need for a mediator which may act as a transmission of the mechanism to explain the relationship. Due to this fact, this study hypothesized to test the following:

Hypothesis 4e: organizational excellence mediates the relationship between human resources management and sustainability performance.

2.12.15 Organizational Excellence as a Mediator between Quality Assurance and Sustainable Performance

Basically, quality assurance is the sustenance of a required level of product quality and service design by means of attending to every phase of the processes of production and delivery. In other word, quality assurance involves assessment procedures and systematic management to achieve quality or quality results. This study employed planning, design, analysis, production and post-production and delivery as the measures to examine quality assurance in food and beverage of Malaysia companies (Cukier, Barkel, Vaughan & Gekas, 2012). Cheng (2003) studied quality assurance in relationship with interface, future and internal education. Quality assurance is reported in the study to be categorized into three phases of paradigm. The first paradigm is the interface quality assurance which ensures that education services satisfy the stakeholders' need and are reckonable to the

public accessibility; while the second and third paradigm is the internal quality assurance improving the internal process and environment such that the teaching and learning effectiveness can be ensured in achieving the planned objectives.

The rate at which environmental regulation and policy is being followed is used to measure environmental quality. It is a feature of the regulatory natural and social relationships and the functional significance of which are depended on the capacity to reflecting the maximum environmental safety process (Chervinski, 2014). The customer concerns for protecting environment influence the high demands of compelling environmental regulations on production and product end-of-life process. Hak, Moldan and Dahl (2012) examined the environmental sustainability index based on environmental issues. The study in terms of environmental pollution showed that no environmental law and conservation has been extensively discussed. The study showed that environmental accountability, transparency, adequate and information capability for credible policies and enforcement would lead to a best performance in environmental activity performed by various institutions internationally (Santos-Reyes & Lawlor-Wright, 2001). Our immediate environment is that factor that affects our ways of activity or life although different from human being. Thus, the study hypothesized the following:

Hypothesis 4f: Organizational excellence mediates the association between quality assurance and sustainability performance

2.12.16 Organization Excellence as a Mediator between Information and Analysis and Sustainability Performance

TQM is a problem-solving methodology and an organization-wide philosophy t5hat focuses on systematically and continuously improving of the quality of processes, services

and products. The TQM key elements include information and analysis, a strong customer focus, well executed approach to process management, strong emphases on design quality and extensive employee development and participation (Hayes, Wheel-wright & Clark, 2001).

In contrary to traditional manufacturing environment, in which information is fully controlled by the management, the theory of TQM calls for a continuous flow of information to the employees who are actually performing the work in order to achieve sustainability within the organization. There are to forms to the recommended information: The first one is the process information for source identification of defects and monitoring the consequence of the improvement activities (Reeve, 1990). Provision of process information not only encourages closer coordination and communication between work groups but also facilitates problem correction and identification between work groups and allows more rapid cross-functional problem solving and smoother production flow.

Information on plans and strategic priorities must be broadly communicated through the organization. By communicating and analyzing information on strategic plans and priorities to workers, organization can help to ensure that the chosen the chosen project contribute to broader business objectives. Moreover, the role of TQM in achieving strategic goals can be explicit by distributing quality strategies, plans and goals to board members and executives and incorporating this information into the information and analysis process to achieve excellence. Thus, the hypothesis below is proposed:

Hypothesis 4g: Organizational excellence mediates the association between information and analysis and sustainability performance.

2.12.17 Environmental Regulation and Policy as a Moderator between Total Quality Management (TQM) Elements and Sustainable Performance (SP)

Undoubtedly, both TQM and ERP have attracted the attention of people both in business and academic environment (Ahmad & Schroeder, 2002; Besseris, 2012). Such popularity is traced back to the unprecedented high number of published articles in both areas in an attempt of the scholar in the fields to validate its theories and concepts. In addition, the success gained through implementation so far by TQM allows it to be more renowned. This has led to a pronouncement of TQM practices as an organization's critical success indicators in technology-driven society of today. This has also opened a significant number of opportunities for environmentalists such as environmental managers and sustainable environment building teams in many organizations. Also, the study of Ambec, Cohen, Elgie and Lanoie (2013) considered the effect of environmental regulations on competitiveness and innovation. It is reported that firms are required to necessarily minimize an externality like pollution.

Therefore, ERP is considered as one of the critical factors or organization; thus, one can infer that TQM can be achieved best through effective ERP which eventually leads to sustainable performance. In view of this fact, this study interests in examining how integration of ERP with TQM will enhance sustainable performance. Hence, the hypothesis is stated as:

Hypothesis 5: Environmental Regulation and Policy moderates the association between TQM elements and sustainable performance.

Summarily, the following hypotheses are formulated and to be tested in this study:

H_1: Management leadership as TQM element has a significant effect on sustainable performance

$H1_{a:}$ Management leadership as TQM element has a significant effect on sustainable performance

$H1_b$: Benchmarking as TQM element has a significant effect on sustainable performance

$H1_c$: Continuous process improvement as TQM element has a significant effect on sustainable performance

$H1_d$: Service design as TQM element has a significant effect on sustainable performance

$H1_e$: Human resources management as TQM element has a significant effect on sustainable performance

$H1_f$: Quality Assurance as TQM element has a significant effect on sustainable performance

$H1_g$: Information and Analysis as TQM element has a significant effect on sustainable performance

H2: Environmental Regulation and Policy has a significant effect on sustainable performance

H3: Organizational Excellence has a significant effect on sustainable performance

H4: Organizational Excellence mediates the relationship between TQM elements and sustainable performance

$H4_a$: Organizational Excellence mediates the relationship between management leadership and sustainable performance

$H4_b$: Organizational Excellence mediates the relationship between benchmarking and sustainable performance

$H4_c$: Organizational Excellence mediates the relationship between continuous process improvement and sustainable performance

$H4_d$: Organizational Excellence mediates the relationship between service design and sustainable performance

$H4_e$: Organizational Excellence mediates the relationship between human resources management and sustainable performance

$H4_f$: Organizational Excellence mediates the relationship between quality assurance and sustainable performance

$H4_g$: Organizational excellence mediates the relationship between information and analysis and sustainable performance

H5: Environmental Regulation and policy moderates the relationship between TQM elements and sustainable performance

2.13 Summary

The scholarly foundation for this study is presented in this chapter by providing a comprehensive review of literature. From the past studies reviewed, the construct conceptualization involved; TQM, sustainable performance and environmental regulation and policy are done. This chapter exclusively presents the relationship and interconnectivity between the variables and the theoretical, methodological and practical gap are presented in this study. In reference to that, the research framework to be validated by this study is presented. Lastly, the dimensions and variables to be applied in this study are educed and hypotheses to be tested are outlined.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology adopted in this study. This chapter has four main parts: the first part unfolds the research paradigm of the study; the second part exclusively elucidates the research design; the third part explains the research approach employed by the study. The final part focuses on the data collection, instrumental design, sampling and, reliability and validity of measurement items.

3.2 Research Paradigm

This research is categorized under the correlational research as it is in accordance with testing of the formulated research hypotheses (Creswell, 2009). The approach to the research is post-positivism which is regarded as a research pattern performed with research activities from problem identification, review of literature and specification of research purpose, data collection, analysis and interpretation and data reporting (John & Ngoasong, 2008). To achieve the study's objectives, the mentioned steps are followed with their strict terms strict terms. A quantitative approach is suitable for this study because the study's objectives is to measure the impacts with the view of predicting and analyzing the nature using hypothesis testing and statistical computations (Zikmund et al., 2010). In order to achieve the study's objectives, the underpinning theories as explained in chapter two are used as guides. This research is formally aimed to examine empirically the effect of continuous process improvement, service design, management leadership, quality assurance, human resources management, information and analysis and

benchmarking as TQM elements on sustainable performance (economic, social and environmental) of F&B companies with the use of environmental regulation and policy as a moderator and organizational excellence as the mediator. From the outlined of the objectives of the study, it is considered a quantitative research with approaches for the objective realization (Sekeran & Bougie, 2016).

3.3 Research Design

This study is an exploratory research design as it focuses on the aspects of a study where past studies have been conducted while further studies are still required in order to attend to other questions that are yet to be given answers. The choice of this research design is chosen in accordance with the techniques and methods used to conduct the research because it elucidates how data would have been gathered and analyzed towards the realization of the research objectives.

Many past studies have undoubtedly examined the impacts of TQM on sustainable performance although mainly in corporate enterprises with variables that are specific to that field. Asides the fact that, this study contextualizes the dimensions of TQM in an attempt to meet the specificity of food and beverage companies, environmental regulation and policy and organizational excellence are newly introduced as moderator and mediator to be tested in the model of the research. The above statement shows the importance of quantitative-type of exploratory study; an exploratory study helps to understand the situations being more accurately and comprehensively studied (Sekeran & Bougie, 2016).

The following concepts are to be achieved while applying the exploratory research design for this study:

i. Problem definition and consequent formulation of the hypothesis to be evaluated;
ii. Challenges and concept identification in the techniques of the research;
iii. Presentations of approach and concepts that can apply effective interpretation of data in multivariate data analysis in particular;
iv. Revelation of unknown relationship between the variables studied by exploring quantitative data.

Therefore, in this study, the issue deduced is addressed by applying the exploratory method. In this Figure 3.1 presented the summary of the whole research from research paradigm to analysis, interpretation and reporting.

3.4 Research Approach

The qualitative and quantitative are generally the two main approaches to research. The mixed mode which is considered to be the third approach is the integration of qualitative and quantitative which is gaining more attention currently (Creswell, 2009). This study employed the quantitative approach to identifying the effects of TQM elements on sustainability performance and the effects of the moderation of ERP while considering organizational excellence to mediate the relationship. This study therefore is more of regression i.e. studying the effect of one variable over the other (Sekeran & Bougie, 2016). There is a befitting opportunity given when using qualitative design to practically solve the problems identified by the study and test the research hypotheses. Descriptive method of analysis and some univariates or bivariates tools are mostly used (Rungtusanatham, Ogden, & Wu, 2003; Pavlov & Bourne, 2011; Bon & Mustafa, 2013). As at the moment of this study, no study has employed multi-variate statistical analysis using PLS-SEM.

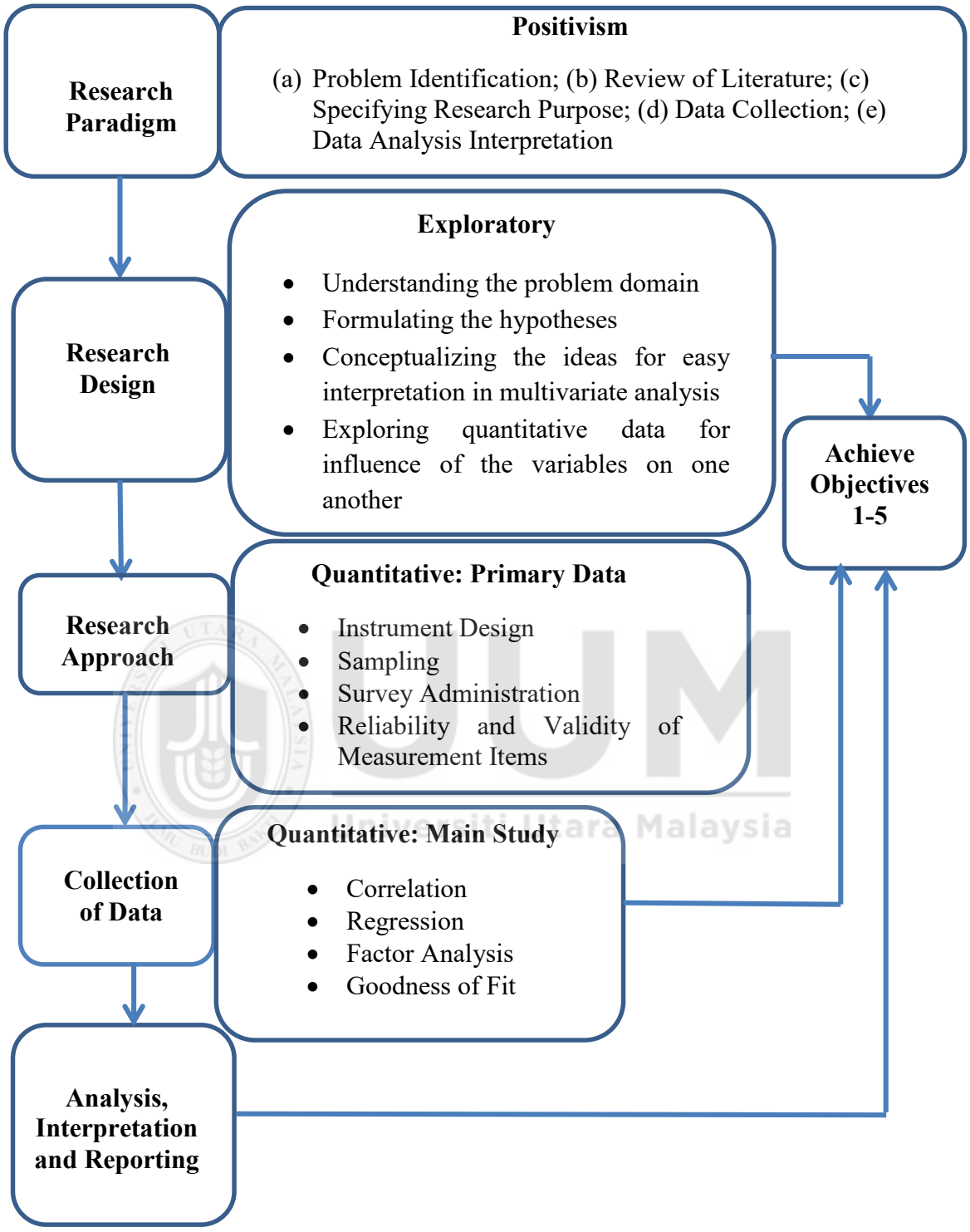

Figure 3.1
Research Methodological Framework

3.5 Data Collection Procedure

A quantitative approach is employed as a survey in this study. Also, as a survey instrument, questionnaire is appropriate. All the variables to be examined in this study are continuous variables. The variables are: continuous process improvement, service design, management leadership, quality assurance, human resources management, information and analysis and benchmarking. The other variables are ERP being the moderating variable, organizational excellence as the mediating variable and sustainable performance as the dependent variable (Zikmund et al., 2010). Questionnaire administration served as the best approach of collecting data that will be suitable in this approach due to the reliability of data from quantitative research being numeric. Since the interest of this study is to capture the options of managers of the Malaysian food and beverages companies, this is undoubtedly justified. This implies that responses deducted from the responses are from the individual's perception of the reality of the work environmental and its distinctiveness.

The data were gathered from the employees of the companies who are top managers of F&B producing companies as sampled by this study in regards to attending issues discussed in this study background – as shown in chapter one. The survey was administered individually to the respondents of the companies. The items designed are as questions to be asked under each of the constructs studied by this study. This was administered to the company employees that are of managerial positions (Creswell, 2009).

3.5.1 Instrumentation

The instrument for collection of data employed in this study is survey questionnaire. Hence, it is imperative to carefully design the items of the questionnaire with simplicity

to reflect the variables employed in measuring the constructs of the research model. Notably, the questionnaire's items are constructed in accordance with the conceptual explanation from the literature, adopted and adapted. This is justifiable according to Zikmund et al. (2010).

Items addressing questions to measure the company's sustainable performance, environmental regulation and policy, organizational excellence, continuous process improvement, service design, management leadership, quality assurance, human resources management, information and analysis and benchmarking are into two sections of the questionnaire. Relevant literatures are used as guidance for the development of the survey instrument. Meanwhile, supporting literatures are adequately cited in places where there are newly developed items i.e. where a method of primary data collection had not been used in the past.

3.5.1.1 The Questionnaire Structure

Using questionnaires in survey researches is as important as structuring the questionnaire (Organ *et al.,* 2006). Perhaps, this is true as there are a lot of challenges that may adversely tamper the validity of the data and the rate of responses (Hair et al., 2007). In order to get rid of those challenges, this study followed the suggestions by Organ et al. (2006) and Gutpa (2006) and took different precautions such as abiding by the research ethics of protecting the respondent's identity, appropriate and unambiguous scaling of items and separating items according to constructs. The Figure 3.2 below presents the pictorial illustration of the questionnaire structure.

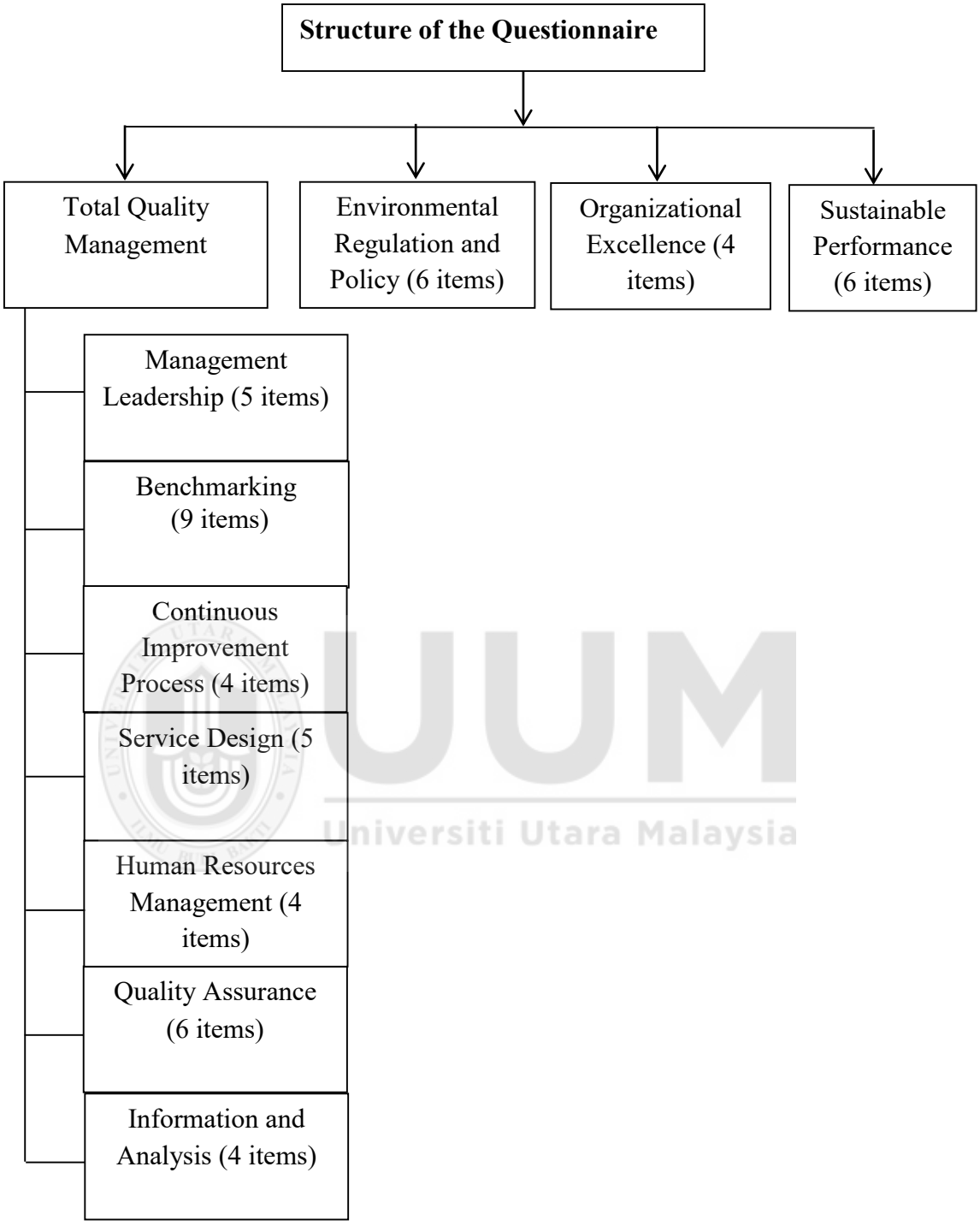

Figure 3.2
The Questionnaire Structure

3.5.1.2 The Scales of the Questionnaire

Depending on the pattern in which a researcher wants to measure and the motives, there are series of design pattern of questionnaire. According to the majority of the scholars, a desired pattern for study must be acceptable universally and common. For instance, the respondents must clearly understand the statements used in the questionnaire (Oppenheim, 1992; Warwick & Lininger, 1975); the respondents should not be led by the statements of the questionnaire (Parten, 1950; Young, 1939). In addition, the most effective manner or way should be tried by the researcher to maximize the validity of the items, lessen the stress of answering the questions from the respondent and very economical in terms of the costs incurred in data collection. Therefore, this study used Likert scale type of questionnaire. Some researchers employ the use of even number scale, for example four-point and six-point scale. Malhotra and Mukherjee (2004) stated that longer scale allows the respondents to choose independently the options without being compelled. Martin and Polivka (1995) also mentioned that, a neutral or no-opinion option is preferred by the respondents in order to feel free from been limited to the choice of the researcher. In another vein, Malhotra (2004) and Robert (2009) hold the opinion that, giving a neutral or no-opinion option affects the data value which is apparent in many studies internationally conducted. Before participants make decision finally, they are quite simulated to think over the given items.

A likert scale is a psychometric type of scale applied in instrument to rate the level of agreement or otherwise from the respondents in a given statement. Basically, the Likert scale is a five-point scale ranging from “strongly disagree” to “strongly agree” with “neither disagree” or agree in between. Meanwhile as confirmed by Joshi, Kale, Chandel

and Pal (2015), longer scales (i.e. a 7-point, 10-point scales) are preferred for having more varieties of options which in turn increase the probability of meeting the objective reality of people.

In this study, the selection of an odd scale particularly the 5-point scale is appropriate because it will increase the reliability of the data as well as lessen social desirability bias as proven by Krosnick (1999). Respondents were asked to give response to each item by showing the level of agreement using five-likert scale. In addition, 5-point Likert Scale is used as it can make compromise between the contradictory goals of offering enough option since only two or three options indicates measuring direction only rather than measuring the strengths of opinion and making things manageable for the respondents. And lastly, most previous studies highly recommended the Likert scale (Dawes, 2008; Pearse, 2011). The next sub-section introduces the items of the constructs used in this study.

a. Sustainable Performance Dimension

The Sustainable performance construct is measured using economic, environmental and social performance. In total, six (6) items are adapted from the study of Caiado et al. (2018) and Brent' and Labuschagne (2004). To designate the assessment period, the last three years of the organization activities are used. The items used in measuring the sustainable performance and their coding are presented in Table 3.1 below:

Table 3.1
Sustainable Performance Coding

Item	Code
During the last three years, our organization has achieved…	
Decrease in cost of material purchasing	SP01
Decrease in cost of energy consumption	SP02
Reduction in emission of air caused by the activities of the manufacturing company	SP03
Reduction in water wastage from the company's activities	SP04
Improvement of employees' health and safety resulting from green practices	SP05
Engagement and incentive for local employment	SP06

Source: Adapted from Caiado et al. (2018) and Brent and Labuschagne (2004)

b. TQM Practices Dimension

The previous chapter discussed the critical elements that affect the successfulness of TQM. During the analysis of the TQM's critical success factors, it is revealed that, many researchers made an attempt to identify variables that constitute TQM like: Anderson and Sohal (1999); Brah, Tee and Rao (2002); Brah, Wong and Rao (2000); Christos, Fotopoulos and Psomas (2010); Dewhurst, Matinez-Lorente and Dale (1999); Rao (2006); Terziovski and Samson (1999); Yusuf, Gunasekeran and Dan (2007). There are some commonalities among them when analyzing these dimensions such as continuous process improvement and management leadership. From the work done by previous scholars, seven variables have been selected: leadership management, quality assurance, service

design, human resources management, continuous process improvement, benchmarking and information and analysis to measure the efficiency of TQM's practices on sustainable performance in manufacturing firms.

To measure management leadership, human resources management, service design and benchmarking constructs, Brah et al. (2000) was adopted. In the case of service design, the items are further adapted from Kaynak (2003) as cited Saraph et al. (1989). It is noteworthy that the coefficient alphas for all construct should not be less than 0.70 cutoff requirements as opined by Kaiser (1974). Information and analysis construct has been adopted from measurement used by Brah et al. (2002) in order to reflect the ontext of this study. In their study, Information and analysis tried to clarify how the business evaluate the data collected, analyzed and used for effective and efficient work for increasing improvements. Their questionnaire based on the Australian Quality Awards Framework (AQA). Continuous improvement construct has been adapted from measurement used by Rao (2006) as presented below. The explanations of Abdous (2009) and given on the concept of quality assurance was adopted and modified into 6-item construct description. This study categorizes quality assurance to planning, process focus and production and delivery, with total of 6-item. Table 3.2 exhibited the items used to measure TQM practices.

Table 3.2
Total Quality Management Practices Coding

Author(s)	Item	Code
	Management Leadership	
Brah et al. (2002)	Senior management encourages changes actively and implements a culture of	ML1

	commitment, trust and involvement in moving towards best practices	ML2
	Idea from team members are implemented actively in assisting management	ML3
	Quality goals are clearly identified for employees to achieve	ML4
	Members of the company are rewarded consistently for quality improvement and good suggestion	ML5
	Quality is viewed by the senior management as more important than schedule and cost objectives	
	Human Resources Management	
Brah et al. (2002)	Our organization has effective bottom-up and top-down process of communication	HRM1
	Our organization provides training in quality principals such as data analysis, team building, statistical techniques and problem solving	HRM2
	Employees' suggestion are evaluated regularly and formally	HRM3
		HRM4

	Our line workers are given necessary resources to make corrections to quality problems and inspect their own work	
	Quality Assurance	
Brah et al. (2002)	Our quality department is effective in training and solving quality problems	QA1
	Regulatory and legal requirement and risk factors are integral parts of performance improvement and management of our operations, products and services	QA2
	Our organizations focuses on best practice achievement	QA3
	There is continuous coordination between quality department and other departments	QA4
	Quality of new service or product is viewed as more important than reducing its cost	QA5
	The process of production is designed in a way that it adds value to our products	QA6
	Service Design	
Brah et al. (2000) and Saraph et al. (1989)	Before marketing, new service design are reviewed thoroughly	SD1
	Quality of new service is more considered than cost reduction	SD2

	In the design team, there are employees from other functional departments	SD3
	In a design of new services to the market, employees who are not in the design team are also involved to a great extent	SD4
	Newly introduced service design process is critically examined prior to its implementation	SD5
	Information and Analysis	
Brah et al. (2002)	Our organization has formal guidelines to ensure improvement, reliability and consistency of quality data gathering cycle	IA1
	Our organization measure often the process and product quality	IA2
	On quality improvement, our decisions are always based on objective data	IA3
	Employee satisfaction is regularly and formally measured	IA4
	Benchmarking	
Brah et al. (2000)	In our organization, it is emphasized always that benchmarking is our strategy to achieve a better competitive positions	BM1

	We pay visit to other companies, internationally or locally to examine their practices	BM2
	In our company, we conduct research to find out the best practices of other international and local policies.	BM3
	Our organization have a way of identifying a benchmarking subject	BM4
	Our organization has a collective way of identifying partners	BM5
	Our organization determines current competitive gap among other companies	BM6
	Our organization identifies the critical success factors or indicators to be benchmarked	BM7
	Our organization projects future performance	BM8
	Our organization develops action plans after comparison	BM9
	Continuous Process Improvement	
Brah et al. (2000)	In our company, there is always an emphasis in all activities at various levels on the continuous improvement	CPI1

	In our company, continuous improvement is emphasized to the employees in the training programs provided	CPI2
	In the policies of our company, improving the quality is more important than the quantity or short- term goals	CPI3
	In our company, all stations and development believe that, they can serve better and survive in a highly competitive environment by implementing continuous improvement.	CPI4

c. Environmental Regulation and Policy Dimension

The environmental regulation and policy construct is measured to designing the totality of 6-item construct. The items are adopted from the study of Akanmu, Bahaudin and Jamaludin (2017). However, the first item is adopted but with further inclusion of descriptions (i.e. public and private nuisance) for easy comprehension by the respondents to suit the purpose of the study. The items used in measuring the competitive advantage and the coding are presented in the Table 3.3.

Table 3.3
Environmental Regulation and Policy Coding

Authors	**Items**	**Code**
Akanmu, Bahaudin & Jamaludin (2017)	**Environmental Regulations and Policy**	

	This organization ensures public health in all aspects through all the obstruction such as emitting air pollution, public and private nuisance	ERP01
	Our organization establishes free environment for all the customers	ERP02
	Our organization enforces constitutional law relating to environmental obligation	ERP03
	Our organization keeps human habitation free from pollution	ERP04
	Our organization keeps up the provision of the constitution relating to environmental obligations for ensuring human rights	ERP05
	Our organization has enforcement of human right to pollution-free environment under constitutional obligation for its employees	ERP06

d. Organizational Excellence Dimensions

According to some studies, there are different constructs of organizational excellence such as accommodations, workgroup, information, personnel and organizational features (UTPA, 2003). Organizational excellence is used as independent variables using three key factors of organizational excellence of high performance (Darling & Nurmi, 1995; Pinar & Girard, 2008): constant innovation, committed people and customer focus. Some suitable items are adopted for the purpose of this study i.e. to investigate organizational

excellence as a mediator between TQM, ERP and sustainable performance. All the dimensions of the construct are all covered by those items adapted from Pinar and Girard (2008).

Table 3.4
Organizational Excellence Coding

Author (s)	Item	Code
Pinar & Girard (2008)	Customer caring is the top priority of the company	OE1
	Our company develops services with customers in mind	OE2
	Our employees are very committed to our company	OE3
	Our employees are the most valuable asset of the company	OE4

3.5.2 Pilot Study

A pretest evaluation through pilot study was conducted to validate the instruments before the latest version of the questionnaire is distributed in order to gather the study's real data. Prior to the pilot study, a pre-test was conducted and the questionnaire was evaluated and examined thoroughly to ensure that the items employed were all well-worked and clearly understood.

Sproill (2004) stated that the pilot study is essential to test the reliability and validity of the measures. Additionally, Bradburn, Sudman and Wansink (2004) reported that, it comprises responses from the same study's sample where there was actual data collection. The data collected for the pilot study were from 46 respondents working in food and beverage companies. The respondents were asked if they have any sentiment or difficulty

regarding understanding the questions and if there is need to remove the misunderstanding parts of the items provided.

The main requirement for selecting previous instrument according to Hair et al. (2010) is the internal consistency that is achieved though calculation of the reliability coefficient of cronbach alpha.

3.5.3 Reliability and Validity of the Measurement Item

The instrument items designed for this study is subjected to both content and construct validity testing. The adapted and adopted items were evaluated for content validity and feedback from the respondents was taken into account for further improvement. Also, a pilot study to test the internal validity of the constructs that are to be investigated by this study is recommended (Creswell, 2009; Kumar, et al., 2008). Due to that, the questionnaire passed through phases of transition processes. Some items were corrected to increase the degree of reliability of their sources and all the items were scrutinized and screened as they have their roots from reliable sources.

According to Hair et al. (2010), reliability is an estimation of the level of consistency among multiple measurements of a construct. Therefore, this study conducted reliability analysis in order to measure the consistency among the items of the constructs. Sekaran (2003) added that many researchers used four common methods to measure the reliability of the constructs: alternative form method; split-half method; test-retest method; and the coefficient method of cronbach alpha which is common among researchers.

The first two methods have been criticized as argued by Davis (2000) due to weakness in their practicalities. On the other hand, those shortcomings of other methods are overcome

by the method of Cronbach alpha. The dominant way of testing reliability among the researchers of social science has always been the method of Cronbach alpha of measuring the reliability.

Therefore, this study employed the method of Cronbach alpha by following the mainstream of social science research for each construct separately to assess the reliability measures. For an exploratory research, 0.7 is the minimum standard value for Cronbach alpha (Nunnally, 1978). Notably for all the constructs from the Table 3.5, the values of the Cronbach alpha are all at the acceptable level of consistency. Nunnally and Beinetein (1994) stated that most of the tabulated alpha coefficient values should be above the agreed level of alpha (0.70). Additionally, for any construct to measure the reliability, the 0.6 is the minimum acceptable level of Cronbach alpha. However, none of the variable is lower than 0.60 which shows that the items are all reliable to test the hypotheses (Hair et al. 2010).

Table 3.5
Reliability Analysis of the Items

Constructs	**No. of Original Items**	**Cronbach's Alpha**	**Items Deleted***	**Cronbach's Alpha if items deleted**
Benchmarking	9	0.833	Nil	0.833
Continuous process improvement	4	0.796	Nil	0.796
Environmental regulation and policy	6	0.785	Nil	0.785
Human resources and management	4	0.881	Nil	0.881

Information and analysis	4	0.825	Nil	0.825
Service Design	5	0.872	Nil	0.872
Management leadership	5	0.863	Nil	0.863
Organizational Excellence	4	0.925	Nil	0.925
Quality Assurance	6	0.906	Nil	0.906
Sustainable Performance	6	0.897	Nil	0.897

*Number of items as sequenced in the questionnaire

The measurements can reveal the good level of reliability but shortage in validity (Sekeran, 2003). Thus, the reliability can be prerequisite for a measurement but not for the measurement goodness. Similarly, validity shows at what level the measurement scales proposed to be measured. Several methods can be found in the literatures of methodology of the validity measures. The content validity is one of these common measures which are in accordance with the judgmental evaluations by many experts to make sure the items of measurements contain the construct measures in all aspects. A detailed review literatures in this study was used to create the items that contain the measurements.

3.5.4 Factor Analysis

Factor analysis is a method to reduce data in order to minimize the number of variables to a smaller set that have the same information (Baker & Inventado, 2014). In the stage of pilot study, to validate the instrument of this study, the factor analysis on each construct was separately tested in the same way of the researchers in the literatures (Ahire et al., 1996; Saraph et al., 2006).

To check the appropriateness and applicability of the factor analysis, the Kaiser-Mayrt-Olkin (KMO) has been extracted to measure the adequate sampling and Bartlett's test of sphericity. It is argued by Kaiser (1974) that, KMO is an index to make comparison between the magnitude of the observed correlation coefficient and partial correlation coefficient. In the same view, the closer will the KMO near to (1.0), and the smaller the partial correlation between the pairs of the variables and the more suitable the factor analysis will be. As shown in Table 3.6, the pilot study findings showed the KMO to be between 0.548 and 0.857. Hence, the appropriateness of the factor analysis. From the factor loading of the tested items, it was found that, most of the items are more than 0.5 which is acceptable according to Hair et al. (2010).

Table 3.6
Reliability and Factor Analysis of the Finalized Instrument (Pilot Study)

Constructs	No of Items	Factor Loading	Cronbach's Alpha	Eigen-Value	% of Variance	KMO	Items Deleted
Benchmarking	9	0.869, 0.881, 0.819, 0.858, 0.758, 0.815, 0.859, 0.779	0.833	3.944	65.156	0.828	Nil
Continuous Process Improvement	4	0.757, 0.776 0.734, 0.733	0.796	2.830	55.067	0.728	Nil

Environmental Regulation and Policy	6	0.767, 0.781, 0.992, 0.792, 0.596, 0.643,	0.785	3.861	78.512	0.822	Nil
Human Resources Management	4	0.740, 0.825, 0.785, 0.725	0.881	1.822	75.539	0.798	Nil
Information and Analysis	4	0.919, 0.740, 0.716, 0.856	0.825	2.825	67.544	0.737	Nil
Management Leadership	5	0.898, 0.862, 0.843, 0.666, 0.641	0.863	3.862	68.559	0.833	Nil
Organizational Excellence	4	0.837, 0.837, 0.860, 0.834	0.925	3.873	78.635	0.776	Nil
Quality Assurance	6	0.878, 0.857, 0.838, 0.809, 0.695, 0.791	0.906	3.910	54.630	0.875	Nil
Service design	5	0.917, 0.869, 0.854, 0.835, 0.819	0.872	1.898	66.639	0.618	Nil
Sustainable Performance	6	0.807, 0.739, 0.788, 0.890, 0.819, 0.970	0.897	2.916	54.644	0.740	Nil

3.5.5 Population of the Study

A collection of objects and individuals with related features is known as a research population. There are common peculiarity, features and characteristics in all objects or individuals within a particular population. Also, population is known to be one of the most important elements in research. Castillo (2009) pointed out that: population could be classified into two: target and accessible population. Target population is the whole group of population or objects where to draw the conclusion as interested the researcher – is it referred to as the population of theory. The population in which the researchers implement

their conclusions is the accessible population. In the same vein, it is called also as the subset of the target population or the population of the study.

This study draws its sample from the accessible population to be used. Based on this foundation, the target population for this study is all food and beverage companies in Malaysia which is a subset of agro-based industry. A total number of 303 companies are gotten from food and beverage Federation of Malaysian Manufacturers in joint collaboration with Malaysia External Trade Development Corporation directory (FMM-MATRADE Industry Directory, Food & Beverage, 2015). Information like telephone numbers, postal and addresses of the sampled population can be extracted from the FMM directory (Ahmad, 2012). The following segment discussed the sample of the study.

3.5.5.1 Sample of the Study

Sridhar (2009) stated that sample depicts a selection of some part of an aggregate on the basis of which a statistical inference is made about the aggregate. The fact is that researchers usually cannot make the option of a sample inevitable (Herek *et al.,* 2010). Undoubtedly, on the characteristics of interest, the sample corresponds to the larger population. In those circumstances, the assumptions of the research from the samples are perhaps applicable to the whole population.

3.5.5.2 Sample Size

Since this study is employing PLS-SEM as the analysis technique, the sample size is gotten through the Rule of 10. The "10 times" rule of thumb is often used in the literature as a guide with respect to PLS to estimate the minimum requirement of the sample size. The rule of thumb suggests that PLS requires a sample size of ten times the most complex

relationship within the research model only (Kock & Hadaya, 2018). The large value is the most complex relationship between:

1. The constructs with the highest number of formative indicators, if the research model has formative constructs i.e. the largest measurement equation (LME); and
2. The affecting dependent latent variables (LVs) with the largest number of independent LVs i.e. the largest structural equation (LSE).

Alternatively, G-power table can be used to evaluate the sample size instead of Krajcie and Morgan table which is only useful if you are doing Probability Sampling. The power analysis should be used to decide the sample size. Using the power analysis, the Table 3.7 below reveals the sample sizes.

Table 3.7
Determination of Sample Size through G-Power Analysis (Green, 1991)

Numbers of Predictor	**Sample size using power analysis**		
	Effect Size		
	Small	**Medium**	**Large**
1	390	53	24
2	481	66	30
3	547	76	35
4	599	84	39
5	645	91	42
6	686	97	46
7	726	102	48
8	757	108	51
9	788	113	54
10	844	117	56
15	952	138	67

20	1066	156	77
30	1247	187	94
40	1407	213	110

In other word, the minimum sample size for a model is based on the maximum number of arrows pointed at any latent variable in the model using the G*Power technique. From Figure 2.9, the research model shows the conceptual model of this research where management leadership, benchmarking, quality assurance, continuous process improvement, human resources management, service design and information and analysis and organizational excellence make eight arrows towards sustainable performance being the latent variable and the variable which carried highest number of arrows. Therefore, the total sample size suitable for the data analysis of this study is 160 as shown in the Figure 3.3 below.

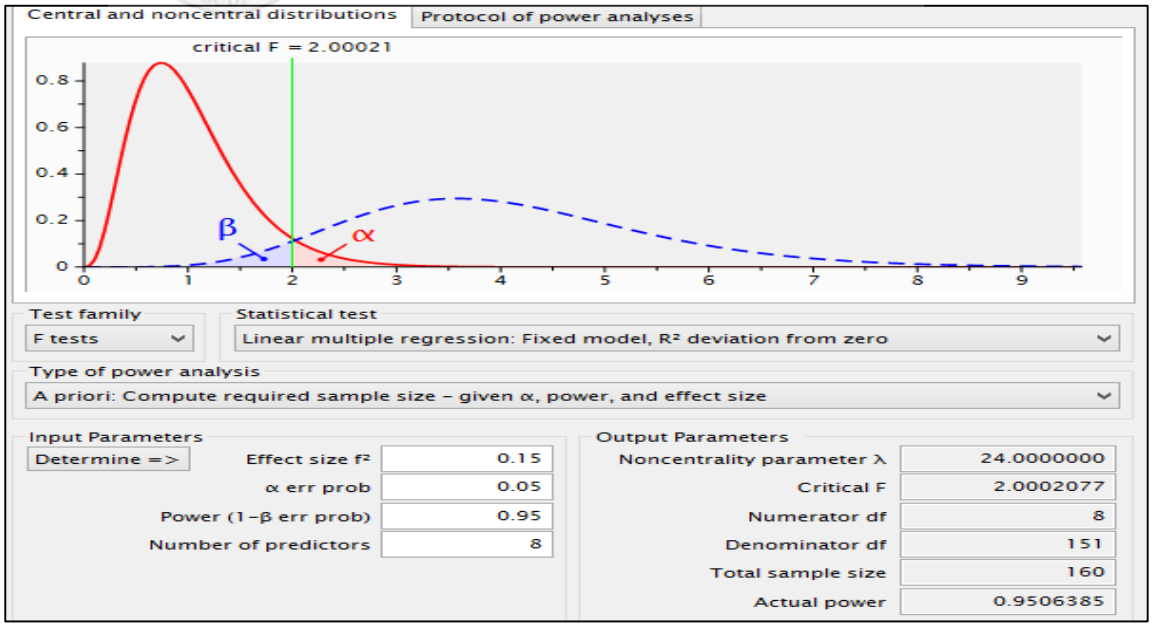

Figure 3.3
Total Sample Size Using G-power Analysis

3.5.5.3 Sampling Technique

Techniques for probability sampling in researches are many and differed. For instance, simple random sampling directly selects element given equal opportunity for every component to be selected, Cluster sampling on the other angle prefers to group components in accordance with their laid down criteria. Robert *et al.* (2009) stated that some researches combine more than one sampling technique at a time. Multistage sampling occurs when sampling procedures were carried out in different stages where researcher breaks down the sample into smaller sampling component at each stage.

Simple random sampling under the techniques of probability sampling is used in this study as every single individual has a certain probability of being known and selected. The sample is decided using random process using the probability of each individual. By using random selection to choose the participants, a list of all the population of the companies are created and used. Each individual has an independent and equal chance of being selected when using random selection.

3.5.6 Unit of Analysis

Sample is a representative of a particular population for a purpose of a study (Creswell, 2009). The companies' managers are the unit of analysis, implying that they will administer the questionnaires, and their responses are computed using the normal 5-point Likert scale. This study focuses on Malaysia F&B companies as shown in chapter one of this study. The study shall be conducted in 303 Malaysia F&B companies. The respondents are drawn from the organization's managerial and operational personnel. Due to the complexity of the questionnaire structure capturing aspects such as financial performance, economics, sustainability, environmental regulation and policy, quality

management, organizational excellence, the questions can be responded to jointly by directors heading different departments such as operations manager, research and development, exports, legal and secretarial issues, finance, human resources technicalities, marketing, and other related departments based on the discretion of the company.

3.5.7 Technique of Data Analyses

The analysis tool employed in this research is smart PLS 3.0 by Ringle et al. (2005). The smart PLS 3.0 is a multivariate and powerful analysis technique that contains as special case specific version of number of other analysis methods (Ringle et al., 2005). Smart PLS 3.0 reflects an informal thought about causal relationship that is well-known in social science theorizing and translating such theories into data analysis in courses such as economics. Smart PLS 3.0 is a promising analysis technique that avails researchers with numerous opportunities. The technique is a regression-like method that can reduce the residual variance with special ability to efficiently work in both fewer and larger samples unlike AMOS SEM that does not work well with some samples (Hair *et al.,* 2010).

In terms of reliability, Smart PLS 3.0 takes measurement errors into consideration by clearly adding measurement error variables corresponding to the measurement error portions of the observed variables (Chin, 1998). Hence, the conclusions on the relationship between the variables are similar to connections between variables of perfect reliability and with no bias of measurement error. This is actually very important as data in the social science frequently contain a lot of measurement errors. Smart PLS 3.0 is widely known for its ability to test the hypotheses and their compatibility; their assumptions about parameters, the variances and co-variances of all the observed

variables. Few studies on TQM and sustainable performance with the moderating effect of environmental policy and regulation or mediating role of organizational excellence used PLS structural equation modeling (SEM).

3.5.8 The Motive behind PLS-SEM as Analysis Technique

The objective of this study is to investigate the relationships among the latent variables; therefore, the latent analysis technique is considered to be the most suitable option. There was an option to use covariance-based SEM technique such as AMOS but the data must be normally distributed (Hair et al., 2010). The assumptions have been previously tested in SPSS before choosing the technique of the analysis. According to Urbach and Ahleman (2010), PLS is considered to test the structural equation models with the following arguments by researchers:

1. On sample size, PLS requires fewer demand than other methods;
2. Normal-distributed input data is not required using PLS;
3. Complex structural equation model with large number of constructs can apply PLS
4. Both formative and reflective constructs can be handled by PLS; and
5. Prediction is easily achieved through PLS

3.6 Summary

The methods applied to achieve the objectives of this study and justifications are discussed in this chapter. As previously mentioned, a quantitative survey is used for the questionnaire administration while Smart PLS 3.0 is employed as the analysis technique for the data. The item design in the questionnaire is discussed extensively with the variable measured in the study. The chapter also discussed detailed procedure for unit of analysis, sampling technique, and population sample and data collection.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The data analysis result is reported in this chapter. Firstly, this study examined the demographic variable distribution (Gender, Age, Years of Experience and Qualifications) for all respondents. The demographic variables are considered because the data are gathered from the employees of the company who are working for the F&B producing companies or those who are in the best positions to answer the questionnaire like the top managers. Undoubtedly, this is justifiable as the interest of this study is to capture the managers' opinions of Malaysia F&B companies. It indicates that the information expected to be deducted from the responses can be derived from the environmental reflection of the work reality of the individual and its differences. Also, this study discusses the normality test and descriptive statistics. The study employed PLS-SEM to examine the measurement model before the structural model and hypothesis tests.

The goodness of the outer model connected to the study's constructs are named: management leadership, information and analysis, benchmarking, quality assurance, human resources management, continuous process improvement and service design as the independent variables; organizational excellence and environmental regulation and policy as the mediating and moderating variable respectively; and sustainability performance as the dependent variable. Next is the examination of the construct validity to know the quality of the structural model. Lastly, the results of the hypotheses were reported and the

mediating and moderating effects of organizational excellence and environmental regulation and policy were equally reported.

4.2 Demographic Distribution of the Respondent

Survey questionnaire was used for over 6 months to collect data from March 2017 to September 2017 from food and beverage companies. From the 303 questionnaires that were sent out, only 98 were returned which is used for the data analysis. The variables for the demographic details are categorized into four: age, gender, years of experience and qualification. In Table 4.1, from the job position, the directors of the companies have the highest percentage with 18.6% out of the other job positions such as Quality Officer/Analyst, HRM Officer, Operation, Production and Technology Manager while the benchmarking officer has the lowest percentage of 4.9%. The male respondents are 74 representing 75.6% while the female are 24 with 24.4%. In terms of the respondents' ages, majority are between the ages of 35-44 (41.1%), followed by 18-35 (32.7%) and 45-60 (25.6%) while the least of the responses came from those within the age range of 60 and above with 0.6%.

Table 4.1
Demographic Information of the Participants

Demographic Variable	Category	Frequency (N=98)	Percent (%)
Job Position	Quality Officer/Analyst	18	17.6
	HRM Officer	11	10.8
	Operation/Prod/Tech Manager	14	13.7
	Marketing Director	9	8.8

	Managing Director	19	18.6
	Benchmarking Officer	5	4.9
	Executive Staff	9	8.8
	Research & Development Officer	13	12.7
Gender	Male	74	75.6
	Female	24	24.4
Age	18-34	32	32.7
	35-44	40	41.1
	45-60	25	25.6
	60 & Above	1	0.6
Quality of Education	Postgraduate	40	41.1
	First degree	46	47.6
	Secondary	9	9.5
	Primary	1	0.6
	No Certification held	2	1.2
Years of Experiences	Below 3 years	13	13.1
	4-6 years	52	53.0
	7-9 years	9	8.9
	Above 10 years	24	25.0

Most of the respondents (46) are holding first degree qualification representing 47.6% , Secondary (9.5%), Primary (0.6%), no certification held (2) which represent 1.2% and the rest of 40 respondents (41.1%) possess graduate degree (Master or Doctorate). In terms

of years of experience of the respondents, majority of them are having 4-6 years of experience (53.0%), 13 for respondents having below 3 years of experiences (13.1%), 9 respondents have 7-9 years of experience (8.9%) and the rest (24) were having experiences above 10 years (25.0%).

4.3 Descriptive Statistics

To describe the total quality elements: human resource management (HRM), service design (SD), information and analysis (IA), continuous process improvement (CP), benchmarking (BM), quality assurance (QA) and management leadership (ML); environmental regulation and policy (ERP); organizational excellence (OE); and sustainability performance (SP), descriptive analysis of the data was conducted from the respondents' perspectives. The mean, standard deviation, minimum and maximum deviation of the constructs were reported in the Table 4.2. The individual implementation factor of HRM, SD, IA, CP, ML, BM, QA, ERP, OEC and SP were shown in the results. Additionally, it indicated the perceived level of performance in the domain of F&B companies.

According to Table 4.2, the minimum and maximum for all the construct in 1.25 and 5.00 respectively which represents the Likert scale of the study. The data revealed that among all the constructs, organizational excellence has the maximum value with the lowest standard deviation. The results show that the head section managers emphasized and focused on the organizational excellence practices such as constant innovation, commitment and customer focus to accomplish the desired sustainability performance. In contrast, the lowest vale of the standard deviation shows that the respondents are not

significantly differed in their perspectives on the importance of achieving organizational excellence in order to obtain sustainability performance.

The management leadership is the next construct with high value of mean. The mean is 4.498 with 0.582 as the standard deviation. The result showed that besides organizational excellence, managers emphasized on management leadership in order to achieve sustainable performance. The standard deviation and the mean of service design are 0.757 and 3.871 respectively. The result emphasized on the importance of service design other than management leadership explained above. The importance of continuous process improvement is realized also by the responses with standard deviation and the mean value of 0.539 and 4.223 respectively. The significance of continuous process improvement is moderated by the respondents. However, the importance of continuous process improvement for any organizational development is unquestionable but not more than the service design, management leadership and organizational excellence.

Furthermore, the Table 4.2 shows that human resources management and benchmarking have the mean values of 4.039 and 4.021 respectively. Additionally, their standard deviations are 0.649 and 0.648 respectively. Similarly, information and analysis is reported to have the lowest mean value of 3.255 with standard deviation of 0.835. The result indicates the lack of analytic information in food and beverage companies which result to poor practices in information and analysis. In other word, information and analysis is one of the most important factors to achieve other practices. Therefore, the industry should focus on how awareness on the importance of having quality information can be increased and satisfy general public with analytic information in order to achieve the aimed sustainable performance.

Moreover, the data in Table 4.2 revealed that quality assurance has the maximum mean of 4.098 with standard deviation of 0.721 which reflects the importance of the quality assurance when implements quality management. The Table 4.2 also shows the results of environmental regulation and policy with a mean value 4.080 and standard deviation as 0.689. This considerably high value indicates that the respondents realized the importance of following environmental laws, rules and regulations.

Regarding sustainability performance, the results in the Table 4.2 shows that the mean value is high as 4.318 with lower standard deviation of 0.547. This study reveals that, the respondents criticized the present performance of F&B companies which reflect the problems of the study although self-assessment shows high performance.

Table 4.2
Descriptive Statistics of the Construct

Constructs	N	Minimum	Maximum	Mean	Standard Deviation
SD	98	1.80	5.00	3.871	.757
ML	98	2.60	5.00	4.498	.582
HRM	98	2.00	5.00	4.039	.649
OEC	98	2.75	5.00	4.525	.513
SP	98	3.00	5.00	4.318	.547
CP	98	2.75	5.00	4.223	.539
BM	98	2.78	5.00	4.021	.648
IA	98	1.25	5.00	3.255	.835
QA	98	2.33	5.00	4.098	.721
ERP	98	2.00	5.00	4.080	.689

4.4 Assumptions of Normality

The normality is employed to show the symmetrical curve that has the greatest frequency of scores towards extremes in the middle and small frequencies (Pallant, 2005). In order to achieve this, studies by Kline (1998) and Pallant (2005) opined on normal distribution assessment of scores for the dependent and independent constructs through the values of Kurtosis and Skewness examination. The nature of the measure and scale of the construct may negatively or positively affect the skewed results in social science (Pallant, 2005). Additionally, Kurtosis is a score to measure distribution that represents the degree to which observation around the central mean is gathered.

Notably, the values of skewness outside the range of +1 to -1 are significantly skewed distribution (Hair et al., 2006). Meanwhile, Kline (1998) reported that the cutoff between +3 and -3 is acceptable. According to these criteria mentioned by several researchers by Kline (1998) (+3 to -3), the values of the skewness are within the acceptable range; however, according to Hair et al. (2006), the values are not acceptable (+1 to -1). In the same view, Coakers and Steed (2003) suggested that the Kurtosis values to range from +3 to -3 which are acceptable as presented in Table 4.3 below. In reference to above information, the results revealed that, some of the skewness values deviated from the normal distribution. Thus, PLS SEM is employed in this study to test and handle skewed and non-normal data to test the hypothesized relationship which is the distribution of free statistical modelling technique (Chin, 1989).

Table 4.3
Result of Kurtosis and Skewness of Normality

Constructs	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
SD	-.428	.187	-.357	.373
ML	-1.096	.187	.587	.373
HRM	-.129	.187	-.511	.373
OEC	-1.266	.187	1.204	.373
SP	-.310	.187	-.680	.373
CP	-.229	.187	-.626	.373
BM	.127	.187	-1.067	.373
IA	-.079	.187	-.655	.373
QA	-.211	.187	-.826	.373
ERP	-1.031	.187	.508	.373

4.5 Multicollinearity Test

Hair et al. (2010) stated that the multicollinearity test is highly recommended among the variables before the initial test of the model. This shows the presence of relapse in the correlation matrix where the independent variable is significantly and highly correlated with other independent variables. Hair et al. (2010) added that multicollinearity can be revealed when the value of correlation is more than 0.90. The multicollinearity test is examined by assessing the tolerance and the variance influence factor (VIF).

Furthermore, the amount of variability of the chosen independent variable that is explained by other independent variables is the VIF value while the inverse of VIF is the tolerance (Hair et al., 2010). There is occurrence of multicollinearity when two or more

indicators in the model provide redundant information and correlated about the response. The tolerance and VIF are used to measure the multicollinearity. There is a problem with the multicollinearity if the value of the VIF exceeds 4.0 or tolerance less than zero (Hair et al., 2010).

The Table 4.4 indicates the highlights of the collinearity statistics by the model for the independent variables. As this study employed Smart PLS, the values of VIF are given automatically. A multicollinearity issue is said to occur when the value is more than 10; the maximum level of VIF is 10 (Hair et al., 1995) while Ringle et al. (2015) reported that the maximum level of VIF is 5. The table shows that the range values of VIF to be between 1 and 2.981, which shows that there is no issue in Multicollinearity. Therefore, there is no assumption violation of the Multicollinearity in the results reported.

Table 4.4
Test of Multicollinearity

ITEMS	VIF	ITEMS	VIF
BM1	2.323	OEC1	1.088
BM2	1.710	OEC2	2.580
BM3	2.981	OEC3	1.078
BM4	1.669	OEC4	1.619
BM5	1.413	QA1	1.348
BM6	1.310	QA2	2.443
BM7	2.897	QA3	2.737
BM8	1.498	QA4	2.257
BM9	1.884	QA5	1.782
CP1	1.426	QA6	1.692

CP2	1.379	SD1	1.683
CP3	1.544	SD2	2.321
CP4	1.338	SD3	2.182
ERP1	1.743	SD4	1.898
ERP2	1.935	SD5	2.227
ERP3	2.818	SP1	2.683
ERP4	2.722	SP2	1.026
ERP5	1.414	SP3	2.096
ERP6	1.114	SP4	2.531
HRM1	1.082	SP5	2.880
HRM2	1.932	SP6	1.974
HRM3	2.251	ML1	1.509
HRM4	1.660	ML2	1.719
IA1	1.303	ML3	2.198
IA2	1.590	ML4	1.724
IA3	1.239	ML5	1.389
IA4	1.751		

4.6 Testing the Goodness of the Measurements

The goodness of the measures of this study was examined to identify the factors underlying the variables (in Chapter 5) and utilized the Partial Least Square Structural Modeling using Smart PLS 3.0 to set up the construct validity of the measures which shall be discussed in the following sections.

4.6.1 Test of Outer Model Measurement Using PLS-SEM

Before the tests of the hypotheses, the PLS-SEM technique was used to assess the measurement and outer model. Therefore, the two-step approach by Anderson and Gerbing (1988) that comprises a measurement model and structural model (Lee, Kim & Kwahk, 2016) was followed to achieve the aim. The model of the study with structural dimensions is presented in Figure 4.1

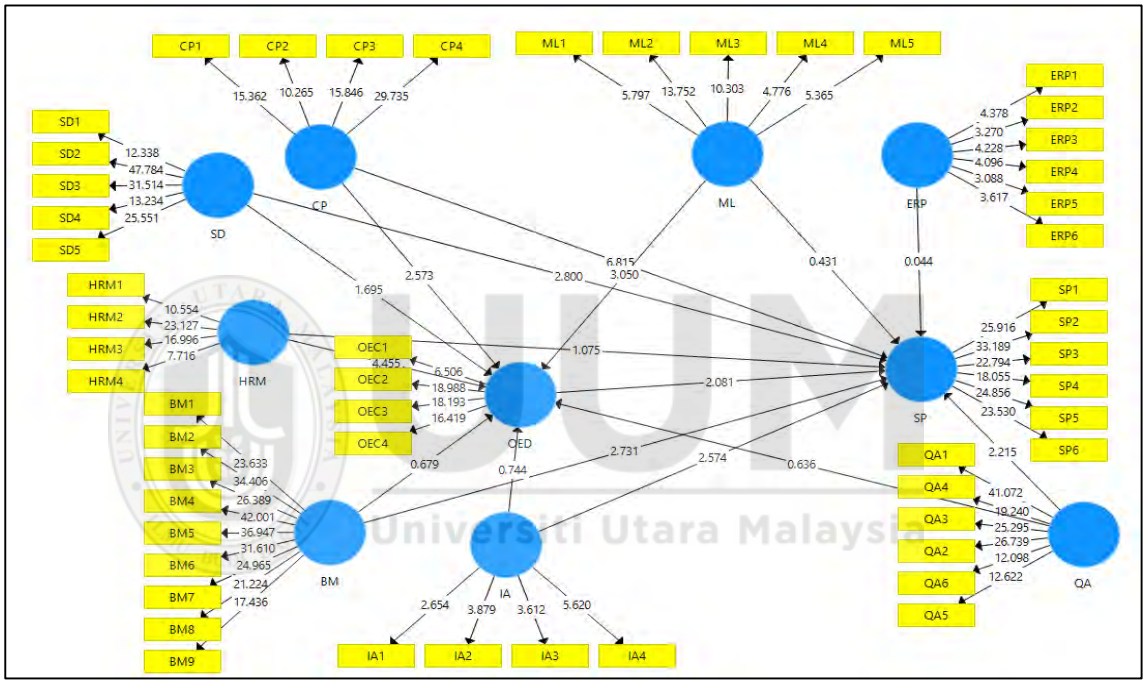

Figure 4.1
The Research Model

4.6.1.1 The Construct Validity

According to Hair et al. (2010), the construct validity can be examined through the discriminant validity, content validity and the convergent validity.

4.6.1.1.1 The Content Validity

The content validity is referred to as the degree to which the items proposed to measure a construct suitably measure the concept that is designed to be measured (Hair et al., 2010).

Otherwise, the items that are designed to measure a construct should highly load respectively than their loading on other constructs. Therefore, through deep-depth review of the past studies in literature review, this can be insured on how items were generated. According to the analysis in factor analysis concept, all items were correctly assigned to their constructs. The content validity of the measure as explained in two manners in shown in Table 4.5. First, in relation to other constructs, there are highest loading in the items on their respective constructs. The second manner is that, the item loading were significantly loading on their respective constructs affirming the content validity of the measure (Chow & Chan, 2008).

Table 4.5
Factor Analysis and Loading of the Items (Cross Loadings)

	BM	CP	ERP	HRM	IA	ML	OED	QA	SD	SP
BM1	**0.769**	0.529	0.085	0.420	-0.048	0.041	0.305	0.233	0.361	0.506
BM2	**0.841**	0.523	0.142	0.417	-0.133	0.063	0.319	0.250	0.335	0.474
BM3	**0.819**	0.460	0.180	0.395	-0.014	0.086	0.326	0.233	0.324	0.498
BM4	**0.868**	0.518	0.177	0.294	-0.045	0.102	0.267	0.213	0.329	0.500
BM5	**0.858**	0.489	0.227	0.359	-0.021	0.137	0.202	0.230	0.359	0.500
BM6	**0.812**	0.464	0.150	0.332	-0.048	0.071	0.269	0.191	0.313	0.441
BM7	**0.808**	0.506	0.112	0.406	-0.048	0.112	0.207	0.294	0.270	0.422
BM8	**0.759**	0.463	0.244	0.356	0.025	0.108	0.177	0.320	0.322	0.491
BM9	**0.719**	0.413	0.276	0.332	-0.046	0.043	0.186	0.317	0.352	0.505
CP1	0.408	**0.737**	0.049	0.396	0.108	0.020	0.234	0.230	0.238	0.491
CP2	0.420	**0.677**	0.272	0.321	0.027	0.110	0.270	0.234	0.169	0.436
CP3	0.431	**0.756**	0.127	0.221	0.064	-0.004	0.321	0.157	0.163	0.460
CP4	0.510	**0.793**	0.171	0.467	0.098	0.006	0.377	0.306	0.359	0.740
ERP1	0.122	0.157	**0.763**	0.161	-0.025	0.195	0.103	0.097	0.095	0.146
ERP2	0.188	0.051	**0.681**	0.115	-0.087	0.129	0.044	0.052	0.109	0.061
ERP3	0.211	0.163	**0.792**	0.101	-0.072	0.191	0.013	0.075	0.129	0.100
ERP4	0.154	0.150	**0.792**	0.060	0.006	0.114	-0.069	0.025	0.044	0.086
ERP5	0.077	0.057	**0.596**	-0.036	-0.087	0.052	-0.038	-0.061	0.001	0.077

ERP6	0.174	0.196	**0.643**	0.068	0.251	0.096	0.038	0.057	0.182	0.192
HRM1	0.358	0.608	0.197	**0.640**	0.024	0.015	0.342	0.326	0.334	0.578
HRM2	0.351	0.229	0.049	**0.820**	-0.021	0.092	0.458	0.293	0.386	0.294
HRM3	0.364	0.283	0.033	**0.805**	-0.017	0.124	0.360	0.185	0.239	0.317
HRM4	0.208	0.158	0.008	**0.655**	0.000	0.094	0.240	0.150	0.197	0.212
IA1	-0.030	0.079	-0.036	0.090	**0.619**	-0.047	-0.006	-0.007	0.058	0.092
IA2	-0.072	-0.019	0.124	-0.089	**0.740**	0.000	-0.095	-0.102	-0.077	0.053
IA3	-0.064	0.111	0.072	-0.007	**0.716**	-0.032	-0.052	-0.113	-0.153	0.128
IA4	-0.004	0.100	0.011	-0.002	**0.856**	-0.121	-0.035	-0.087	-0.107	0.148
ML1	0.117	-0.013	0.126	0.095	0.042	**0.698**	0.134	-0.075	0.066	0.038
ML2	0.136	0.097	0.208	0.166	-0.074	**0.862**	0.303	0.062	0.040	0.054
ML3	0.055	0.032	0.070	0.041	-0.116	**0.843**	0.204	0.040	-0.037	0.049
ML4	-0.024	-0.042	0.029	-0.007	0.020	**0.666**	0.072	0.008	-0.054	-0.008
ML5	0.018	-0.039	0.194	-0.019	-0.088	**0.641**	0.151	-0.097	0.090	0.000
OEC1	0.379	0.608	0.104	0.386	0.001	0.009	**0.637**	0.283	0.243	0.591
OEC2	0.223	0.218	-0.002	0.381	-0.051	0.253	**0.837**	0.098	0.222	0.270
OEC3	0.161	0.157	-0.008	0.348	-0.106	0.357	**0.860**	0.077	0.297	0.198
OEC4	0.140	0.154	-0.016	0.413	-0.058	0.313	**0.834**	0.061	0.240	0.202
QA1	0.230	0.254	0.103	0.282	-0.099	0.021	0.182	**0.878**	0.272	0.344
QA2	0.279	0.346	0.034	0.325	-0.112	0.015	0.191	**0.847**	0.281	0.317
QA3	0.181	0.220	0.077	0.315	-0.013	0.015	0.179	**0.838**	0.224	0.320
QA4	0.239	0.222	0.010	0.261	-0.064	-0.066	0.177	**0.809**	0.354	0.295
QA5	0.295	0.214	0.105	0.182	-0.065	0.026	-0.087	**0.695**	0.375	0.292
QA6	0.293	0.261	0.021	0.268	-0.167	0.015	0.179	**0.671**	0.354	0.303
SD1	0.356	0.328	0.249	0.209	-0.075	0.014	0.063	0.207	**0.717**	0.337
SD2	0.366	0.326	0.134	0.433	-0.028	0.053	0.389	0.373	**0.869**	0.427
SD3	0.298	0.288	0.058	0.349	-0.027	-0.037	0.320	0.322	**0.844**	0.407
SD4	0.231	0.099	0.161	0.222	-0.173	0.049	0.075	0.241	**0.735**	0.232
SD5	0.374	0.222	0.086	0.353	-0.222	0.073	0.267	0.326	**0.819**	0.342
SP1	0.475	0.633	0.129	0.468	0.129	-0.002	0.373	0.377	0.378	**0.807**
SP2	0.443	0.638	0.067	0.448	0.187	0.010	0.380	0.425	0.371	**0.839**
SP3	0.372	0.578	0.173	0.441	0.031	0.079	0.471	0.327	0.337	**0.788**
SP4	0.557	0.605	0.255	0.352	0.129	0.032	0.265	0.256	0.369	**0.790**
SP5	0.468	0.570	0.143	0.412	0.186	0.047	0.353	0.254	0.390	**0.819**
SP6	0.578	0.559	0.116	0.382	0.060	0.067	0.317	0.240	0.333	**0.770**

4.6.1.1.2 The Convergent Validity

According to Hair et al. (2010), the degree in which a group of variables converge in measuring a particular concept is referred to as the convergent validity. Three criteria should be concurrently tested in establishing a convergent validity namely: average variance extracted (AVE), factor loading and composite reliability. When all the item loading are examined, the values are acceptable if they are more than 0.5 considering the study of Hair et al. (2010) on multivariate analysis. At 0.01 level of significance, all the factor loading are said to be significant as presented in the Table 4.6. The composite reliability is also used to test the convergent validity which refers to the degree at which a set of items consistently indicate the latent variable (Hair et al., 2010). The values of composite reliability and cronbach alpha were reported in Table 4.6. The values of composite reliability and cronbach alpha range from 0.822 to 0.944 and 0.722 to 0.933 respectively which are higher than the recommended level of 0.7 (Fornall & Larcker, 1981; Hair et al., 2010). The convergent validity of the outer model is confirmed and affirmed by these results.

To assess the convergent validity of the outer model, the AVE values are evaluated. It indicates the average of variance extracted among the group of the items in relation to the variance shared with measurement error. In relation to the variance assigned to the measurement errors, the variance covered by indicators in measured by the AVE. Barclay et al. (1995) stated that these sets of items have an adequate convergence in measuring the concerned construct when the AVE value is at least 0.5. The value of AVE range from 0.512 to 0.659; the result indicates an acceptable level of construct validity of the measures employed (Barclay et al., 1995).

Table 4.6
The Analysis of the Convergent Validity

Construct	Item	Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)
Benchmarking	BM1	**0.769**	0.933	0.944	0.651
	BM2	**0.841**			
	BM3	**0.819**			
	BM4	**0.868**			
	BM5	**0.858**			
	BM6	**0.812**			
	BM7	**0.808**			
	BM8	**0.759**			
	BM9	**0.719**			
Continuous Process Improvement	CP1	**0.737**	0.733	0.830	0.550
	CP2	**0.677**			
	CP3	**0.756**			
	CP4	**0.793**			
Environmental Regulation and Policy	ERP1	**0.763**	0.822	0.861	0.512
	ERP2	**0.681**			
	ERP3	**0.792**			
	ERP4	**0.792**			
	ERP5	**0.596**			
	ERP6	**0.643**			
	HRM1	**0.640**	0.722	0.822	0.539

Human Resources Management	HRM2	**0.820**			
	HRM3	**0.805**			
	HRM4	**0.655**			
Information and Analysis	IA1	**0.619**	0.723	0.825	0.544
	IA2	**0.740**			
	IA3	**0.716**			
	IA4	**0.856**			
Management Leadership	ML1	**0.698**	0.812	0.862	0.559
	ML2	**0.862**			
	ML3	**0.843**			
	ML4	**0.666**			
	ML5	**0.641**			
Organizational Excellence	OEC1	**0.637**	0.810	0.873	0.635
	OEC2	**0.837**			
	OEC3	**0.860**			
	OEC4	**0.834**			
Quality Assurance	QA1	**0.878**	0.881	0.910	0.630
	QA2	**0.847**			
	QA3	**0.838**			
	QA4	**0.809**			
	QA5	**0.695**			
	QA6	**0.671**			
Service Design	SD1	**0.717**	0.863	0.898	0.639

	SD2	**0.869**			
	SD3	**0.844**			
	SD4	**0.735**			
	SD5	**0.819**			
Sustainable Performance	SP1	**0.807**	0.889	0.916	0.644
	SP2	**0.839**			
	SP3	**0.788**			
	SP4	**0.790**			
	SP5	**0.819**			
	SP6	**0.770**			

4.6.1.1.3 The Analysis of the Discriminant Validity

It is important to establish the discriminant validity before affirming the construct validity of the outer model. Therefore, it is compulsory to test for the discriminant validity before testing the hypothesis through the path analysis. The degree at which items are differed among the constructs are revealed by the measures. Similarly, discriminant validity shows that items using different constructs do not overlap. In addition, variance between each construct is shared between the discriminant validity. Therefore, the variance shared among the constructs should be lower in values than the discriminant validity (Compeau, Higgins & Huff, 1999). For the purpose of this study, the method of Fornell and Larcker (1981) employed in this study ascertained the discriminant validity of the measures. At the diagonal elements of the correlation matrix, the square root of AVE for all constructs were replaced as presented in Table 4.7. The discriminant validity of the outer model is

therefore confirmed where the diagonal elements in the Table were higher than the other elements of the row and column where they are located. It is believed from the testing made above the construct validity of the outer model that the results obtained are highly valid and reliable regarding the test of hypotheses.

Table 4.7
The Discriminant Validity (Latent Variable Correlation)

	BM	CP	ERP	HRM	IA	ML	OED	QA	SD	SP
BM	**0.807**									
CP	0.602	**0.742**								
ERP	0.219	0.207	**0.715**							
HRM	0.457	0.487	0.120	**0.734**						
IA	-0.053	0.103	0.055	-0.002	**0.737**					
ML	0.104	0.038	0.187	0.102	-0.078	**0.748**				
OEC	0.314	0.415	0.037	0.494	-0.061	0.268	**0.797**			
QA	0.313	0.321	0.071	0.349	-0.110	0.005	0.190	**0.794**		
SD	0.410	0.331	0.154	0.414	-0.113	0.035	0.322	0.381	**0.799**	
SP	0.600	0.452	0.182	0.520	0.152	0.046	0.448	0.393	0.453	**0.803**

4.6.2 The First Order Construct

The distinction between the first order and second order measurement models is explained here before moving forward to examine the conceptual and theoretical aspect of the model's order construct as discussed in the following paragraphs:

Service design (SD) as a latent construct was measured by a set of items from SD1 to SD5 as shown in the Figure 4.2. Similarly, human resources management (HRM) as constructs was measured directly by 4 items through other layer of latent constructs. Therefore, the

independent variables are called a first-order measurement model. The second-order factor structure has two layers of latent variables.

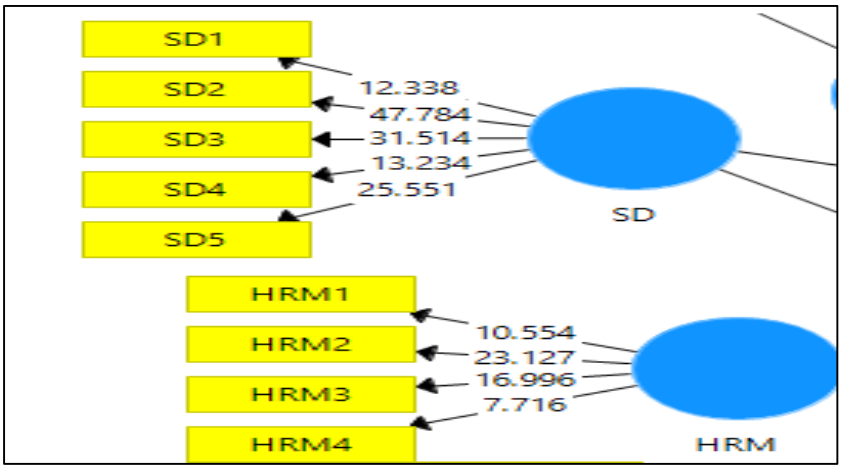

Figure 4.2
First Order Measurement Model of HRM & SD

In this study as example, all the variables (service design, benchmarking, information and analysis, quality assurance, management leadership, continuous process improvement and human resources management as the independent variables; organizational excellence and environmental regulation and policy as the mediating and moderating variable respectively; and sustainability performance as dependent variable) involved are called a first-order constructs as they are directly linked together (Hair et al., 2010).

4.6.3 The Assessment of the Inner Model and Hypotheses Testing Procedures

When the goodness of the outer model has been confirmed, the next thing was to test the hypothesized relationships among the variables. Through the running of PLS Algorithm using Smart PLS, the hypothesized model was tested. Therefore, the path coefficients were generated as illustrated in the Figure 4.3 below.

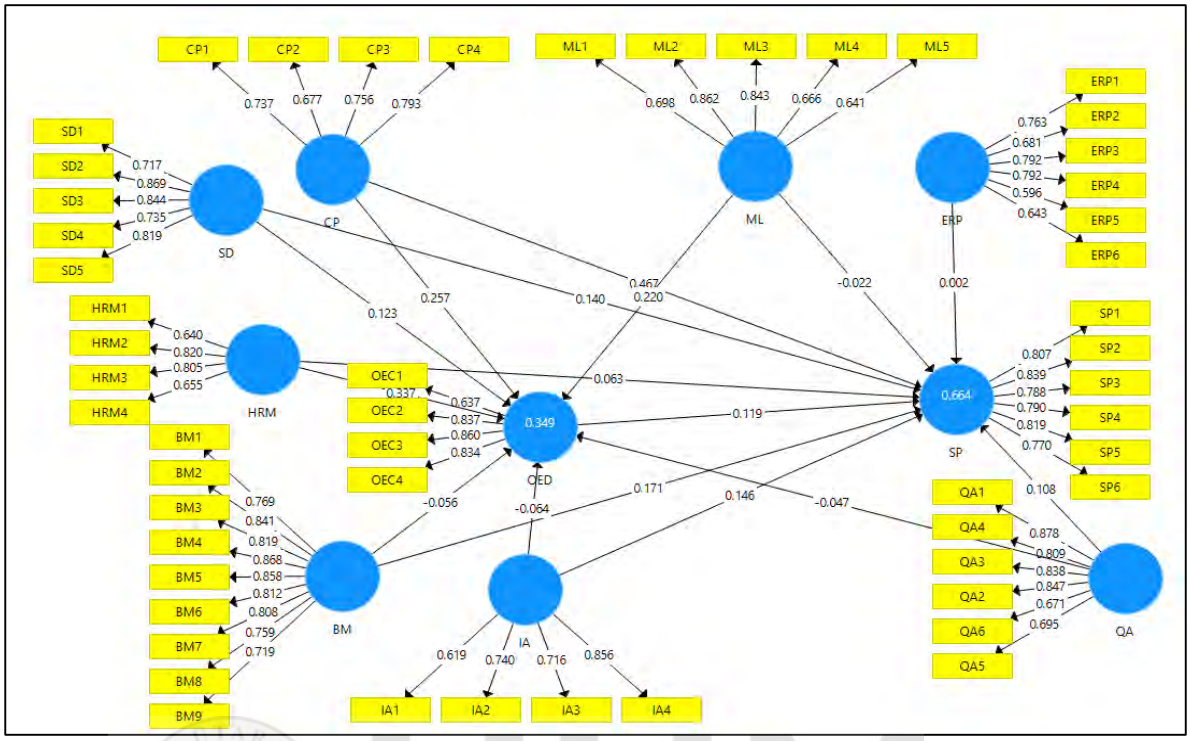

Figure 4.3
Results of the Path Model significance

Table 4.8
The Results of the Inner Structural Model

Hypothesis	Path Coefficient	Standard Error	T Statistics	P Value	Decision
H1a: ML -> SP	-0.022	0.050	0.431	0.333	Not supported
H1b: BM -> SP	0.171***	0.063	2.731	0.003	Supported
H1c: CP -> SP	0.467***	0.069	6.815	0.000	Supported
H1d: SD -> SP	0.140***	0.050	2.800	0.003	Supported
H1e: HRM -> SP	0.063	0.058	1.075	0.141	Not supported
H1f: QA -> SP	0.108**	0.049	2.215	0.014	Supported
H1g: IA -> SP	0.146***	0.057	2.574	0.005	Supported
H2: ERP -> SP	0.002	0.052	0.044	0.482	Not supported
H3: OEC -> SP	0.119**	0.057	2.081	0.019	Supported

*: p< 0.1, **: p< 0.05, ***: p< 0.01

For the purpose of drawing conclusion whether the path coefficients are statistically significant or not, bootstrapping techniques embedded in this study with Smart PLS 3.0. As reported in Table 4.8, the T-Values with each path coefficient were determined using bootstrapping technique and P-Values subsequently were generated. The hypothesis H_{1a} (Management leadership) does not have significant effect on sustainable performance (β = -0.022, t = 0.431, p>0.1). In contrast, benchmarking for H_{1b} (β = 0.171, t =2.731, p< 0.01) has significant effect on sustainable performance. In the case of hypothesis H_{1c} (β = 0.467, t = 6.815, p< 0.01), Continuous process improvement has a positive significant effect on sustainable performance making both hypotheses supported. The result (β = 0.140, t = 2.800, p< 0.01) showed that service design has a positive and significant effect on sustainable performance making hypotheses H_{1d} to be supported. On the other hand, human resources management has values of (β = 0.063, t = 1.075, p> 0.1) to be positively insignificant in the relationship with sustainable performance. This makes hypothesis H_{1e} not to be supported.

Furthermore, the effect of quality assurance on sustainable performance was examined and the result found significant relationship. Thus, the hypothesis H_{1f} (β = 0.108, t = 2.215, p< 0.1) is supported at the level of 0.05. In Information and analysis, H_{1g} (β = 0.146, t = 2.574, p< 0.01) is supported for the relationship between Information and analysis and sustainable performance. The result (β = 0.002, t = 0.044, p> 0.1) showed that, environmental regulation and policy has no significant effect on sustainable performance. Hence, the hypothesis H2 is not supported. The relationship between organizational excellence and sustainable performance is significant with the result (β = 0.119, t = 2.081,

p< 0.1) and therefore, the result supports the hypothesis of the study postulated in H3 at the significance level of 0.05.

As it is normal that the self-assessment showed high performance, this study revealed that the respondents criticized the current performance in food and beverage companies which is a reflection of the problem of the study. Also, the small values of standard deviation indicated the fact that this perception is virtually agreed upon among most managing directors of food and beverage companies.

4.6.4 Testing the Mediating Effect of Organizational Excellence

Based on the theoretical framework of this study, the mediating effect of organizational excellence has been proposed between ML, BM, CP, SD, HRM, QA and IA from one hand and sustainable performance on the other hand. Smart PLS 3.0 was used to examine the mediating effects of organization excellence between the independent variables and dependent variables. The Table 4.9 presents the results from each hypothesis whether it is supported or not.

The results showed that there is a complete mediating effect of Organizational Excellence between Management leadership as Total Quality Management (TQM) element and sustainable performance with the value (β = 0.220, t = 3.050, p<0.01) as the direct relationship between management leadership and sustainable performance is not significant as shown in Table 4.8. Therefore, the hypothesis H_{4a} was supported. In contrast, hypothesis H_{4b} (β = -0.056, t = 0.689, p > 0.1) of benchmarking has no significant effect of mediation by organizational excellence to sustainable performance as it is only significant through direct relationship. Continuous process improvement (β = 0.057, t =

2.573, p <0.01) and sustainability performance with the mediating effect of organizational excellence has a partial mediating effect for hypothesis H_{4c} as both paths are significant. The result (β = 0.123, t = 1.695, p<0.01) showed that service design has a positive significant effect on sustainable performance with the mediating effect of organizational excellence. Thus, hypothesis H_{4d} is supported with this complementary partial mediation.

Table 4.9
Testing the Mediating Effect of Organizational Excellence

Hypothesis	Path Coefficient	Standard Error	T Value	P Value	Decision
H4a: ML*OEC -> SP	0.220	0.072	3.050	0.001	Supported
H4b: BM*OEC -> SP	-0.056	0.083	0.679	0.249	Not supported
H4c: CP*OEC -> SP	0.257	0.100	2.573	0.005	Supported
H4d: SD*OEC -> SP	0.123	0.073	1.695	0.045	Supported
H4e: HRM*OEC -> SP	0.337	0.076	4.455	0.000	Supported
H4f: QA*OEC -> SP	-0.047	0.074	0.636	0.262	Not supported
H4g: IA*OEC -> SP	-0.064	0.086	0.744	0.229	Not Supported

On the other hand, human resources management has values of (β = 0.337, t = 4.455, p< 0.01) to be positively significant in the relationship with sustainable performance with the mediating effect of organizational excellence. This makes hypothesis H_{4e} to be supported with complete mediation. Furthermore, the effect of quality assurance on sustainable performance with the mediating effect of organizational excellence was examined and the result found is insignificant. Thus, the hypothesis H_{4f} (β = -0.047, t = 0.636, p> 0.1) is not supported as only direct relationship between the constructs as shown in Table 4.8 is significant. Also, the mediation for H_{4g} is not supported (β = -0.064, t = 0.744, p > 0.1)

for the relationship between Information and analysis and sustainable performance with the mediating effect of organizational excellence.

4.6.5 Testing the Moderating Effect of Environmental Regulations and Policy

According to the theoretical framework of this study, the moderating effect of environmental regulation and policy has been proposed between the quality management practices and sustainable performance. For testing the moderating effect of environmental regulation and policy, Smart PLS 3.0 was used to examine the effect. As illustrated in Table 4.10, the results showed that there is no moderating effect of environmental regulation and policy in the relationship between the independent variables and sustainable performance at the 0.01 level of significant (β = -0.012, t = 0.177, p> 0. 1). Therefore, the result does not support hypotheses of the study as postulated in H5.

Table 4.10
Testing the Moderating Effect of Environmental Regulation and Policy

VARIABLE	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
H5: Moderating Effect 1 -> SP	-0.012	0.177	0.430
ERP -> SP	0.002	0.041	0.484

4.6.6 The Predictive Relevance of the Model

In this study of multivariate data analysis, the predicting variables explain the R-square of the endogenous variables. Therefore, the magnitude of the R-square for the endogenous variables are considered to be indicators for the model's predictive power (Miles, 2014). Additionally, the technique of reapplying sample was implemented according to Geisser (1975) and Stone (1975) for confirming the model's predictive validity. Wold (1985)

convincingly argued that PLS is employed as a fit software for reuse technique of sample for this purpose.

4.6.6.1 Cross-Validated Redundancy

The Stone-Geisser non-parametric test is used to examine the most predictive relevance (Chin, 1998; Fornel & Cha, 1994; Geisser, 1995; Stone, 1975). The predictive relevance of the model can be examined by performing blindfolding procedure using smart-PLS package. To discard some data, blindfolding step is designed while handling them as missing values for estimation of parameters. Therefore, in order to rebuild the raw data that are supposedly missed earlier, the estimated parameters are employed again. Due to this blindfolding process, a general cross validating metrics Q^2 is produced.

Using the form of the chosen prediction, there are several Q^2 that can be gotten. When the data points are predicted using the underlying scores of the latent variable, then a cross-validated communality is obtained. A cross-validated redundancy Q^2 is the result when the data point prediction is acquired by the LVs. Fornell and Cha (1994) opined that cross-validated redundancy measures can be considered reliable indicator of the model predictive relevance under control. For all the endogenous variables, the redundancy communality was discovered to be larger than zero (Fornell & Cha, 1994). Therefore, the model is said to possess predictive validity; if not, the model's predictive relevance cannot be concluded. The Table 4.11 presents the cross-validated redundancy of sustainable performance to be 0.550. As all the values are higher than 0, it shows that the predictive validity of the model is adequate (Fornell & Cha, 1994).

Table 4.11
Predictive Quality Indicators of the Model

Total	SSO	SSE	1-SSE/SSO
DV	762	342.440801	0.550603

4.6.6.2 R Square

In accordance with the definitions from the literature, R Square is an indicator of the amount of variance estimated by the exogenous variable with its endogenous variable. The quality of the variables present in the model is determined by the value of R Square (Hair et al., 2010). To assess the level of R Square, there are many criteria that can be employed as guidelines. According to Cohen (1988), R Square when more than 0.26 is considered substantial, 0.13 is considered medium while 0.02 is considered weak. In other word, Chin (1998) states that R Square when more than 0.67 is considered substantial, 0.33 is considered medium while 0.19 is considered weak.

From the criteria mentioned above, the values of the R Square for the endogenous variables namely: organizational excellence and sustainable performance are respectively 0.349 and 0.664 as provided in Table 4.12. The results indicate that the quality of the variables are moderate and substantial respectively.

Table 4.12
R-Square

	R Square	R Square Adjusted
OEC	0.349	0.320
SP	0.664	0.645

4.6.6.3 Effect Size

Effect size is a statistical concept that measures the strength of the relationship between two variables on a numeric scale (Lee, 2016). According to guidelines of Cohen (1988) as cited by Selya et al. (2012), f^2 values of 0.35 ($f^2 \geq 0.35$), 0.15 ($f^2 \geq 0.15$), and 0.02 ($f^2 \geq 0.02$) are considered large, medium, and small effect sizes respectively. From the Table 4.13, the effect size of sustainable performance, and the interaction terms for some interaction are above 0.1 while some other are lesser and are smaller. There is only large interaction with CP, and medium with BM, IA, OEC, QA and SD while HRM and ML are considered small for direct effects but no effect in the case of ERP.

In the case of indirect effect from the Table 4.14, the effect size of organizational excellence for some interactions are also above 0.1 while some other are while some other are lesser and are said to be small. There is medium interaction with CP, HRM and ML while IA, BM, QA and SD are considered small for indirect effects.

$$\text{Effect Size (f)} = \frac{R^2_{incl} - R^2_{excl}}{1 - R^2_{incl}}$$

Table 4.13
The Effect Size of the Sustainable Performance and the Interaction Term (Direct Effect)

Items	Effect Size	Remarks
BM	0.048	Medium
CP	0.335	Large
ERP	0.000	Small
HRM	0.007	Small
IA	0.059	Medium

ML	0.001	Small
OEC	0.027	Medium
QA	0.027	Medium
SD	0.041	Medium

Table 4.14
The Effect Size of the Organizational Excellence and the Interaction Term (Indirect Effect)

Items	Effect Sizes	Remarks
BM	0.003	Small
CP	0.056	Medium
HRM	0.114	Medium
IA	0.006	Small
ML	0.073	Medium
QA	0.003	Small
SD	0.017	Small

4.6.7 The Goodness of Fit of the Whole Model

PLS-SEM has only one measure of goodness of fit (GoF) in contrast to composite based SEM. According to Tenenhaus et al. (2005), GoF measured through PLS is the geometric mean of the average R square and average communality for the endogenous variables. For this reason, the variance extracted by both outer and inner model are accounted for by the GoF. The following formula is given using the guidelines setup by Wetzels, Odekeren-Schroder and Van Oppen (2009):

$$GoF = \sqrt{(\overline{R^2} \times A\overline{VE})}$$

The value of GoF using the above formula was obtained to get the following result:

$$GoF = \sqrt{(0.664 \times 0.644)} = 0.653$$

The standards of GoF by Wetzels et al. (2009) is employed to compare the results (i.e. large = 0.36, medium = 0.25, small = 0.1). The results therefore shows that an adequate PLS model validity is shown from the model's goodness of fit.

4.7 Summary of the Findings

The PLSSEM is used as the analysis technique. In this particular chapter, an exclusive usage of PLS-SEM mechanism technique of analysis was unfolded as PLS is a new analysis technique in social science. Before testing the research model, some steps are followed to establish the validity and reliability of the outer model as a standard report in data analysis using SEM. The hypotheses of the relationships were also tested after the reliability and validity proof of the measurement model. The predictive power was evaluated and reported after the assessment of the hypothesized relationship between the constructs. This was followed by the test of the goodness of fit for the overall model which was confirmed eventually. The structural model was finally examined and the results were given in details in Table 4.15:

Table 4.15
Summary of the Results

Hypotheses	Hypotheses Path	Decision
H_{1a}	Management Leadership as a TQM element has a significant relationship with sustainability performance	Not supported
H_{1b}	Benchmarking as a TQM element has a significant relationship with sustainability performance	Supported
H_{1c}	Continuous Process Improvement as a TQM element has a significant relationship with sustainability performance	Supported
H_{1d}	Service Design as a TQM element has a significant relationship with sustainability performance	Supported
H_{1e}	Human Resources Management as a TQM element has a significant relationship with sustainability performance	Not supported
H_{1f}	Quality Assurance as a TQM element has a significant relationship with sustainability performance	Supported
H_{1g}	Information and Analysis as a TQM element has a significant relationship with sustainability performance	Supported
H2	Environmental regulation and policy has a significant relationship with sustainability performance	Not supported

H3	Organizational Excellence has significant effect on sustainable performance of an organization	Supported
H_{4a}	Organizational excellence mediates the relationship between Management leadership and sustainable performance	Supported
H_{4b}	Organizational excellence mediates the relationship between benchmarking and sustainable performance	Not supported
H_{4c}	Organizational excellence mediates the relationship between continuous process improvement and sustainable performance	Supported
H_{4d}	Organizational excellence mediates the relationship between service design and sustainable performance	Supported
H_{4e}	Organizational excellence mediates the relationship between human resource management and sustainability performance	Supported
H_{4f}	Organizational excellence mediates the relationship between Quality assurance and sustainability performance	Not supported
H_{4g}	Organizational excellence mediates the relationship between information and analysis and sustainable performance	Not supported

H5	Environmental regulation and policy moderates the relationship between TQM elements and sustainable performance	Not Supported

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

The summary of the study is presented in this chapter. The motivations and issues behind the research are discussed in the first chapter of this study; followed by the research methodology and then with statistical analysis techniques employed and outcomes of statistical tests in the previous chapter, the possible implication of the results and contribution of the study. The concluding part of the study presents the study limitation and highlights the potential direction for the future.

5.2 Discussion

For more than two decades, TQM has been considered as an important managerial instrument and philosophy that leads to continuous improvement and customer satisfaction to ultimately achieve financial performance in an organization (Intra & Zahn, 2014; Jonsdottir, Ingason & Jonasson, 2014; Krittanathip et al., 2013). In the past studies, the effect of TQM has been examined in different types and contexts such as public sector, industry, services, SMEs, manufacturing and higher educational institutions (Intra & Zahn, 2014; Iyer, 2018; Lintukangas, Kahkonen & Hallikas, 2019; Soderholm et al., 2019; Wong, Wong & Boon-itt, 2015; Zarraga-Rodriguez & Alvarez, 2014).

The present literature of quality management revealed that, the results on TQM practices and sustainable performance relationships are inconsistent (Gond, Grubnic, Herzig & Moon, 2012). There were positive relationships in most of the study conducted (Ali &

Alkayed, 2019; Brook & Pagnanelli, 2014; Ganapathy, 2014; Lega, Prenestini & Spurgeon, 2013; Rose et al., 2019); however, some studies reported opposite results (Glover, Cahmpion, Daniels & Dainty, 2014; Iyer, 2018; Lee & Schaltegger, 2014). Due to this discrepancies and inconclusive results, more researches should be done about relationship in accordance with some other possible relevant variables.

Similarly, the past studies have conflict outcomes on the effects of TQM elements on organization. Many studies on TQM elements reported that, many researches have been conducted to investigate the relationship between TQM and sustainable performance. Many empirical studies have been reported inconclusive results despite the extensive research (Kang et al., 2008). These studies posited that performance can be increased through TQM elements whether financial or non-financial; the practices enhance customer service, improve sales growth, reduce inventory costs and help organizations to gain competitive advantage over competitors (Benavides-Chicón & Ortega, 2014; HassabElnaby et al., 2012; Izvercian et al., 2014; Laxmikumari, Kumar & Ramana, 2014; Shatat & Udin, 2012). However, other studies found different results that TQM elements may affect the sustainable performance adversely (Zarraga-Rodriguez & Alvarez, 2014).

In line with TQM practices, although there are extensive researches conducted in literatures of quality management, several studies pointed out that, the relationship between some practices of TQM practices and sustainable performance is still inconclusive. Many researchers found that, TQM practices are related positively with sustainable performance (Catalin, Bogdan, & Dimitrie, 2014; Lee & Wu, 2014; Soderholm et al., 2019; Wei, Zhao, & Zhang, 2014; Williams, Babatunde, & Jeleel, 2012; Wong, Wong & Boon-itt; 2015). However, some others reported opposite results

(Wiklund & Shepherd, 2005). However, the effects of ML, HRM, BM, CPI, SD, QA and IA on the sustainability of organizations were not elaborately investigated in the literature. In order to resolve this inconsistency, other factors should be considered on this relationship for further investigation (Wiklund & Shepherd, 2005). Therefore, in this present era of fast-paced technological advancement and globalization, organizations should inculcate the TQM practices in their system and practices for more development, growth and survival (Dess, Lumpkin & McGee, 1999).

Environmental regulation and policy is considered as a holistic way to improve organizational performance (Chervinski, 2014) with high impact on performance of business (Santos-Reyes & Lawlor-Wright, 2001). The main driver of excellence that can enhance and promote the organizations from TQM to business excellence level is abiding by the regulations and rules (Mele & Colurcio, 2006). In this study, because of the inconclusive results of in TQM elements and their relationship with sustainable performance, environmental regulation and policy and organizational excellence were justifiably proposed to be the mechanism that can explain those relationships in clearer way. In other words, organizational excellence and environmental regulation and policy as outstanding practices can help organizations to achieve the best results in sustaining performance through the implementation of TQM practices.

In addition, one of the motivations behind this study is that ML, HRM, BM, CPI, SD, QA and IA as variables are considered to share the same objective to enhance sustainable performance and share important success factor equally. Although, there are comprehensive literature review which mentioned the separate effect of each TQM

element on sustainable performance, the integration of ERP and organizational excellence to the paradigm has been unnoticeably neglected.

The aim of this study is to examine the mediating and moderating role of organizational excellence and environmental regulation and policy between TWM elements and sustainable performance as reflected in Malaysian food and beverage companies.

Looking at the highlighted problems from Chapter one and literature review in Chapter 2, the following objectives are meant to be achieved in this study:

1. To investigate the relationship between TQM elements and sustainable performance.
2. To investigate the relationship between environmental regulation and policy and sustainable performance
3. To examine the relationship between organizational excellence and sustainable performance
4. To evaluate the mediating effect of organizational excellence between TQM elements and sustainable performance.
5. To examine the moderating effect of environmental regulation and policy on the relationships between TQM elements and sustainable performance.

In Chapter 2, a literature review was conducted for the purpose of establishing the objectives of this study. The past studies related to TQM elements revealed that total quality management despite its wide implementation and practices in SMEs, public and service organizations, there are minimal researches in agro-allied industry, specifically in food and beverage companies. As stated in the beginning of this study, most of the past

TQM studies reported significant and positive effect on sustainability performance. In contrast, TQM implementation and practices were not successful in all cases. Therefore, the reasons behind the failure of the practices are considered by some authors. On the other hand, some scholars opined that for better findings and explanation, many other relevant variables can be considered in the relationships.

From the Chapter 2, many theories are used to ground and underpin the theoretical framework of the study such as organization and administrative theory, resources based view (RBV), progressive utilization theory (PROUT), contingency theory and institutional theory. However, the main theory of this study is the contingency theory while institutional theory is employed to complement it. Contingency theory underlies on the match between available opportunities and organizational capabilities which will lead to achieve and increase performance. According to Baumol et al. (2009) and Lai et al. (2006), a theoretical lens is provided by the institutional theory which researchers can examine and identify effects that enhance legitimacy and survival of organizational practices and factors such as legal environment regulation, economic incentives, social environment, culture, history and tradition while acknowledging the importance of resources.

In the light of the study's objectives in the Chapter 1 and Chapter 2, variables are deduced to be used and formulate the framework of this study. Thus, to test the developed theoretical framework, a quantitative methodology approach has been applied that was introduced in Chapter 3. In regards to the statements of problem, research questions and

objectives and review of literature, hypotheses of this study have been developed and suitable to be empirically tested. According to the research methodology and research design to collect data, a survey questionnaire was used with reflection on the constructs of the study. All the questions used in the questionnaire were either adopted or adapted from previous and different resources to support the content validity. Also, a likert scale was employed for measuring the items.

In collecting the data of the study, questionnaires are sent by post mail and later returned by stamped addressed envelope by postal mail. This method was adopted for the entire population. The questionnaire was produced in English Language. A number of 303 questionnaires have been distributed and 98 have been returned representing 33.4% as a response rate. For the purpose of analyzing the collected data, PLS-SEM has been employed through Smart PLS software; however, SPSS was employed to obtain the normality testing, descriptive data and non-response bias. The results of the analyzed data were reported in chapter 4 to be further in this chapter. Additionally, the discussion of the result of the analyzed data in this chapter, recommendation, contribution of this study, limitation, direction of future research and conclusion has been concluded.

5.3 Discussion on Research Objectives

This section explains results from the empirical analyses between the constructs considered in the study. It further justifies how the objectives of this study are met and achieved.

5.3.1 Relationships between TQM Practices and Sustainable Performance

For the objectives of this study to be achieved on the effects of TQM elements on sustainable performance, the relationships between the practices of TQM and sustainable performance were evaluated through TQM factors such as Management Leadership (ML), Service Design (SD), Human Resources Management (HRM), Benchmarking (BM), Continuous Process Improvement (CP), Quality Assurance (QA), Information and Analysis (IA). As illustrated in the Chapter 4, the relationship between TQM as composite construct and sustainable performance is positive in some of the TQM elements, while negative in some. These results are consistent with the findings of existing literature (Isaksson, 2006; Lintukangas, Kahkonen & Hallikas, 2019; Sisaye, Bodnar & Christofi, 2005; Smith, 2012; Soderholm et al., 2019; Todorut, 2012; Zink, 2007; Zink 2014). The results posited that, the practices of TQM are crucial for Malaysian food and beverage companies in order to achieve its desired performance and objectives. Undoubtedly, Malaysia food and beverage companies with efficient and effective implementation of TQM can improve the societal and customer satisfaction, lead to better performance, produce good delivery system and mitigate customer's complaint.

The results revealed significant and positive impact of TQM on sustainable performance which is reported broadly in the past studies on quality management; and also the importance of TQM as a managerial philosophy and a determinant for survival of an organization and delights and development of its customers (Khamalah & Lingaraj, 2007; Kumar et al., 2009). In addition, TQM successful implementation can help food and beverage companies to enhance service delivery and avoid daily work defects. When TQM initiatives are successfully implemented, it can lead to reduction in competitive

work, increase in number of employees, improvement in service offered, customer satisfaction and improving the whole organizational performance. Successfully implementation of TQM initiatives can therefore reduce and maintain the rate of errors (Al-Mansour, 2007).

Accordingly, this study conducted more examinations of the importance of the TQM factors as there is variation in the contribution degree of each TQM critical factor (Llorens Montes and Verdu Jover, 2004). Understanding TQM factors comprehensively can help the managers of food and beverage companies for utilizing the available resources in a better way. Therefore, more attention and investment is needed for practical implementation of TQM and allocating more revenue for highly contributing TQM elements. Mixed results are reported from the relationship between TQM practices and sustainable performance in the past studies (Brook & Pagnanelli, 2014; Gond et al., 2012; Idris, 2011). Chapter 4 showed that the TQM elements are significant predictors of the sustainable performance which is discussed in the following section.

5.3.1.1 Management Leadership and Sustainable Performance

The relationship between management leadership and sustainable performance is found to be positive but insignificant as presented in Table 4.8 ($\beta = -0.022$, $t = 0.431$, $p > 0.1$). Thus, the hypothesis H1a is not supported. These findings are in consistency with the past studies of Idris (2011) and Lee and Schalteger (2014). These findings showed that the importance of management leadership system created on clear quality values and vision in order to enhance the whole organization to contribute to the success of TQM implementation programs is not supported. The leadership's responsibilities are to develop and deploy the goals of quality and improve initiative continuously and to

communicate on the quality vision and policy (Rashid & Aslam, 2012). Additionally, for the goals of TQM to be achieved, leaderships are responsible to sharpen the mutual understanding between all the players in all departments (Foster, 2007). Therefore, for the need of stakeholders to be achieved and the satisfaction of the customer to be increased, the leadership system should be based on the capabilities of all employees through continuous improvement process.

Although, it has been argued that sustainable performance is dependent on the management leadership (Ireland & Hitt, 2005), the leaders of F&B companies need strategy to design the suitable trainings for top managers and workers in order to achieve transformational leadership through leadership skills. The result showed that there is awareness among the leaders of F&B companies on the critical responsibilities of implementing strong leadership styles and developing TQM practices to achieve their objectives which is to enhance sustainable performance. Additionally, this result indicates that long term quality plans and clear quality goals are not always required from the top management leaders. Thus, the importance of offering high quality of service delivered to customers more than the costs of the service should be emphasized by the top management leaders.

5.3.1.2 Benchmarking and Sustainable Performance

Talib et al. (2013) reported that one of the essential ways of performance comparison within an industry or outside the industry is benchmarking. The result from the analysis of this study shows, significant and positive relationship between benchmarking and sustainable performance ($\beta = 0.171$, $t = 2.731$, $p < 0.01$). This outcome is in consistent with the past studies that also found positive effect of benchmarking on sustainable

performance (Christofi et al., 2010; Verrier, Rose, Caillaud, & Remita, 2014; Zeppel, 2015). In other word, Dowe et al. (1999) showed that benchmarking out of the TQM factors does not lead to quality results. Nevertheless, the result of positive impact of benchmarking on sustainable performance provided significance and importance of the usefulness of benchmarking. In another word, Samson and Terziovski (1999) reported that some factors of soft TQM might be important more than the hard factors of TQM such as benchmarking. In contrast, Powell (1995) reported the relationship between benchmarking and performance to be insignificant and benchmarking does not affect a successful implementation of TQM.

However, the positive effect of benchmarking on sustainable performance in FBC can be explained from the fact that there is presence of benchmarking practices with other competitors within and outside the industry. This implies that there exists a perception and culture among managers of FBC on their better performance than other organizations by implementing modern practices and strategies in order for them to avoid more benchmarking than others. However, this culture of benchmarking has great effect on increase in sustainable performance.

Therefore, FBC should continue to consider benchmarking as the strategy to achieve the best competitive advantage. The FBC should further conduct researches to find the best practices for both local and international companies within the industry.

5.3.1.3 Continuous Process Improvement and Sustainable Performance

Continuous process improvement is one of the important factors that are critical to lasting improvement of performance (Talib et al., 2013). In relation to the results illustrated in

Table 4.8 in chapter 4, Continuous Process Improvement is found to be significant sustainable performance ($\beta = 0.467$, $t = 6.815$, $p<0.01$). This result is in line with the previous studies (Iyer, 2018; Sisaye et al., 2005; Stanciu *et al*., 2013; Zdanyte, Neverauskas & Sabaliauskaite, 2014). However, the result is in contrast with the study of Burli et al. (2012) that found continuous process improvement to be insignificantly affecting sustainable performance.

The result shows that, attention is given to the practice of continuous process improvement and are effectively implemented in Malaysian F&B companies (FBC). The FBC as an agro-based industry focuses on achieving the jobs related to issues happening within the organizational unit and how the customers and employees are affected. Therefore, they pay more attention on how such services can be improved through continuous process improvement implementation. Continuous process improvement should focus on all management practices rather than some of the practices (Benavent et al., 2005). In rapid urbanization needs, FBC should be continuously sensitive to the constituent needs for more successful implementation of TQM practices, managers and employees; FBC should plan and implement a comprehensive continuous process improvement programs that involve all members and levels in the organization. The TQM practice in FBC should involve all the processes and functions integrated to meet customer needs and achieve the desired continuous process improvement (Ganiyu, Uche, & Elizabeth, 2012). The presence of continuous training indicates how high speed of improvement is achieved. Therefore, training, involvement, process quality, company products and services, feedback system are the best practices to enhance the continuous

process improvement to cover all management practices (Benavent, Ros, & Moreno-Luzon, 2005).

Furthermore, the results indicated that activities and operations in FBC are given proper improvement that can focus more on quality as a long-term goal rather than the short-run. Nevertheless, the FBC should increase the awareness among top managers and employees in departments to practice improvement as a strategy that can enable them to serve the customer in a better way in order to fulfill the desired sustainable performance.

5.3.1.4 Service Design and Sustainable Performance

The result of this study showed that there is significant relationship between service design and sustainable performance ($\beta = 0.140$, $t = 2.800$, $p < 0.01$). This result is consistent with previous studies that found a strong relationship between service design and sustainable performance (Lakhe & Mohanty, 1995; Llorens-Montes & Verdu-Jover, 2004; Talib et al., 2013). Accroding to Lakhe and Mohanty (1995) posited that effective service design would enhance sustainable performance.

The significant relationship between service design and sustainable performance of Malaysian FBC can be traced to the fact that the voice of the customers is relevant as their service delivery and feedbacks are entertained. Although, the effect of customers on the quality of organizational service is still not substantiated (Al-Zamany et al., 2002), this result indicates that the customers are served in a better way in the industry. Also, the traditional performance measures of the companies to focus on the service requirement of the customers are still intact which only needs slight change and improvement. Nevertheless, to further improve the service design, the top managers can look into the

policies of the companies and reengineer some regulations and in turn capitalize on the employee capabilities to improve service design.

Thus, the result shows there is existence of service design before processing and marketing which indicates satisfied beneficiaries. In brief, the result shows that there is involvement from all the employees when designing new service from all other employees in different departments.

5.3.1.5 Human Resources Management and Sustainable Performance

In chapter 4, table 4.8 reported and presented the effects of human resources management (HRM) on sustainable performance. The result indicates that HRM is insignificantly determinant of sustainable performance ($\beta = 0.063$, $t = 1.075$, $p > 0.1$). The result therefore is not in support of the hypothesis H1e. Also, these findings are not in accordance with past studies in the literatures on the effect of HRM on sustainable performance (Arawati, 2005; Talib et al., 2013; Yasin et al., 2004). The measurements used by Brah et al. (2000) that comprises employee training, employee involvement and employee empowerment are the instrument used to measure HRM dimension.

However, the consensus in the past studies of the positive and significant effects of these practices to enhance sustainable performance is in contrary to the finding of this study which shows that these practices have insignificant effect on sustainable performance. The gap between the other managerial practices and employees are revealed by this study. The result indicates that the F&B employees are not involved effectively in decision-making process while receiving less training, empowerment and involvement.

As a result of bureaucratic process in management of the most departments of this industry which involves a very routine daily job and the nature of the management to have orders from the top managers to be employed by employees, the decision-making and the choices from the employees are not empowered by the top management. Additionally, in terms of training, involving and empowering, the needs of the employees are not provided as a manufacturers' management philosophy that focus on quality management work more than the field work. Furthermore, the working environment which focuses on the achievement of the organization and neglects the needs of the employees is sometimes tough. This may be as a result of less active and proactive workers in the industry due to fear of mismanagement of human resources that can jeopardize the entire performance.

According to RBV, HRM is believed to be one of the most important assets and resources that support organization in achieving competitive advantage and their objectives. In addition, it is argued in the contingency theory of the congruence model that HRM can only achieve the desired objectives if there is a connection between the employees' capabilities and their capabilities and involvement practices and empowerment. Therefore, the HRM practices which include empowerment, training and involvement may not be of interest to the organization if managers are not well qualified to drive the performance level through the employees. In the same view, the employees may drive the organization towards wrong direction if the employees are not having the adequate qualification to involve decision-making process. Thus, it is connectivity between the qualification and capabilities of both managers and employees that can lead to increase in sustainable performance.

Regarding the training, it is considered as the basic tool to implement and strengthen practices of TQM. So, if the employees are not well-equipped with basic and needed knowledge and skill, then the employees are not expected to involve in quality development. In another word, Kaynak and Hartley (2008) stated that trained employees are in position to have better understanding of the required improvement and response with positive communication with the customers. Summarily in determining the successful implementation of TQM, the issue of HRM should be reevaluated and reformed due to important roles of the employees.

Therefore, the findings from this result on HRM practices reveal that the industry should focus more on how the employees can be encouraged to achieve quality performance in terms of team management, evaluation of employees' suggestion, providing proper training, empowering employees and indulging them to apply their initiatives when dealing with complaints from the customers.

5.3.1.6 Quality Assurance and Sustainable Performance

As shown in chapter 4, Table 4.8, the result shows that, quality assurance has significant effect on sustainable performance. Therefore, the hypothesis H1f ($\beta = 0.108$, $t = 2.215$, $p < 0.01$) is supported. Generally, it indicates that QA has significant effect on sustainable performance. These findings are consistent with other past studies that posited that there is significant relationship between QA and sustainable performance (Lau & Tang, 2009; Law, 2010; Llorens-Montes & Verdu-Jover, 2004; Mergenthaler, Weinberger & Qaim, 2009; Talib et al., 2013; Timothy, 2008). Lakhe and Mohanty (1995) reported that consistent quality assurance would improve the sustainable performance.

The fact that the voice of the customer is still present, it explains the significant effect of quality assurance on sustainable performance in FBC. In other word, the effect of customers on organizational quality is still not effective (Al-Zamany et al., 2002). However, the traditional measure of performance of FBC towards focusing on the service requirement of the customer are still very much active which may only need slight change and improvement (Langworthy, 1999). For the sake of improving the assurance of quality, FBC of Malaysia should look again at their policies and reengineer them if needed, and in turn link them to the capabilities of their employees to enhance the quality of their service.

Furthermore, the results showed the proper reviewing of the quality assurance before introducing and marketing which reflects satisfied customers. In addition, the results also indicated participation of managers when planning and designing the new service from employees in different departments of Malaysian FBC.

5.3.1.7 Information and Analysis and Sustainable Performance

Information and analysis of TQM is very important to enhance quality performance (Prajogo, 2005). The effect of Information and analysis on sustainable performance is positive and significant in this study ($\beta = 0.146$, $t = 2.574$, $p<0.01$). Information system is one of the essential factors that enhance organizations to derive the best from the TQM initiatives. This factor assists in achieving success and leads to sustainable performance in turn (Ahire et al., 1996). Additionally, the main driver of any effective performance is considered to be information and analysis (Saraph et al., 1989). Other past studies are consistent with the current result of this study (Kartha, 2004; Sila & Ebrahimpour, 2005; Sit, Ooi, Lin & Chong, 2009).

Industries such as food and beverage companies with better infrastructure of information systems would be able to control the quality of information systems that leads to better sustainable performance. The significant and positive results indicate the awareness of the managers of the companies on the significance of information and analysis. In food and beverage companies, there are many systems that promote the companies to analyze and save the gathered information from different systems. The most implemented programs in food and beverage companies were found based on the increase in the awareness of the top leaders to support their performance through efficient and advanced system. Invariably, there should be more orientation in the industry on how to deploy more sophisticated information system into the process of the manufacturing. For this purpose to be further achieved, the Malaysian government should enforce all manufacturing companies to replace all electronic services by smart services. Additionally, the results showed the presence of advanced technology in the industry which is widely used among the various department of the companies.

Summarily, the findings on the practices of information and analysis showed that most of these companies have advanced programs that can reduce the service time. From the analyzed data, it is indicated that food and beverage companies always evaluate and improve their information and analysis.

5.3.2 Relationship between Environmental Regulation and Policy and Sustainable Performance

The relationship between ERP and sustainable performance is tested in order to achieve the second main objective of this study regarding the direct effect of ERP on sustainable performance. As presented in Chapter 4 under Table 4.8, there is insignificant relationship

between ERP as composite construct and sustainable performance at the 0.01 level of significance; thus, the hypothesis H2 is not supported ($\beta = 0.002$, $t = 0.044$, $p > 0.1$). The result is not in line with the past studies that reported significant effect of ERP on sustainable performance (Aigner & Lloret, 2013; Bracci & Maran, 2013; Dam & Petkova, 2014; Gadenne et al., 2012). However, some studies found significant effect of ERP on sustainability performance (Akanmu et al., 2017; Hassan et al., 2018).

This result shows the lack of awareness of the importance of regulations and policy to enhance sustainable performance. Most companies under the food and beverage industry do not appreciate the significant and positive effect of ERP on resulting to work efficiency and fulfillment in spite the simplicity of ERP system as reported by from many researchers. However, despites the insignificant of ERP in FBC on sustainable performance, the results of this study indicates that there are some factors of ERP which led to the outcome of the study.

5.3.3 Relationship between Organizational Excellence and Sustainable Performance

Organizational excellence and sustainable performance are considered the most important goals any organization can pursue to fulfill their mission. There is interrelationship between the two constructs. The result reveals that, there is positive and significant relationship between organizational excellence and sustainable performance at the 0.01 level of significance ($\beta = 0.119$, $t = 2.081$, $p < 0.01$); thus, the hypothesis H3 is supported. This outcome is in accordance with the past studies of Oocharoen and Ussahawanitchakit (2008) and Pinar and Girard (2008) that found significant relationship between organizational excellence and sustainable performance

The factors of organizational excellence such as personnel commitment, innovation and customer focus were realized by the managers of FBC to be very important factors that lead to achievement of high level of performance. The concept of excellence is not a final destination but as a strategy and practice has the ability to create organizational resources and capabilities in achieving success. The past study on the relationship between organizational excellence and sustainable performance showed that to achieve high performance, excellence is precedence for any organization and organizations are helped to improve and enhance their sustainable performance through the organizational excellence models. The significant and positive results also indicate the importance of encouraging innovation among employees, focusing on customers and how sustainable performance is increased by personnel commitment.

5.3.4 The Mediating Role of Organizational Excellence between Total Quality Management (TQM) Elements and Sustainable Performance (SP)

This section explains results from the empirical analyses between the constructs by considering organizational excellence as the mediating variable. It further justifies how the objectives of this study are met and achieved.

5.3.4.1 The Mediating Role of Organizational Excellence between Management Leadership and Sustainable Performance

In order to meet the objectives of this study and answer the questions of the study, this study examined the mediating effect of organizational excellence between management leadership and sustainable performance. The mediating effect of organizational excellence is supported at the level 0.01 significance between management leadership and sustainability performance ($\beta = 0.0220$, $t = 3.050$, $p < 0.01$) using bootstrapping method as presented in Chapter 4 under Table 4.9. Additionally, the result indicates that

organizational excellence is a full mediator in the relationship considering the strong value (Hair et al., 2014). Furthermore, this result substantiates the logical use of organizational excellence as a practice that can support organizations in enhancing performance through effective implementation of management leadership (Kaur, Singh & Ahuja, 2013). In another vein, organizational excellence in this study plays the role of a mechanism that gives explanation on the effect of management leadership on sustainable performance.

From the previous studies, it is confirmed that there is positive relationship between management leadership and sustainable performance from one side while the relationship is negative from another side. Thus, this study in the context of FBC logically proposed and confirmed the significant effect between the relationships.

The results also indicate the importance of excellence as a mechanism that can explain the impact of management leadership as TQM element to achieve sustainable performance through personnel commitment, customer focus and innovation. Therefore, the result reflects the awareness of FBC in practicing excellence in their daily activities.

5.3.4.2 The Mediating Role of Organizational Excellence between Benchmarking and Sustainable Performance

The effect of organizational excellence as a mediator between benchmarking and sustainable performance was examined in this study. In Chapter 4 under Table 4.9, the results of the mediating effect of organizational excellence between benchmarking and sustainable performances is not supported at 0.1 significance level ($\beta = -0.056$, $t = 0.679$, $p > 0.1$).

In contrary to the conventional expectations, the results of the study indicate that there is insignificant and no effect of organizational excellence between benchmarking and

sustainable performance. These findings implied that absence of organizational excellence when dealing with practices such as benchmarking has no consequence in achieving sustainable performance. Additionally, it indicates the opinion of the managers in FBC when dealing with the systems. It shows also that excellence is not necessary to be achieved before achieving sustainable performance through benchmarking. Thus, it seems there is no understanding and awareness among the importance of practicing and having excellence among the managers while implementing benchmarking. The leaders in the industry observed the implementation process as a work that can be done by best practices identification, best practices comparison and best practices implementation and improvement without the need to focus on the other issues that may support in improving the process of implementation and/or ultimately lead to achieving the desired objectives from the system.

Thus, it is advisable for the key players in the industry to employ excellence practices through various models when implementing benchmarking to achieve optimum sustainable performance.

5.3.4.3 The Mediating Role of Organizational Excellence between Continuous Process Improvement and Sustainable Performances

In Chapter 4 under the Table 4.9, the mediating effect of organizational excellence between continuous process improvement and sustainable performance is supported at the significant level of 0.01 ($\beta = 0.257$, $t = 2.573$, $p < 0.01$). The result supports the hypothesis H4c of the study. Additionally, the result showed that organizational excellence effectively acts as a mediator in this relationship. The logical effects of organizational excellence as mechanism that explains the relationship between continuous process

improvement and sustainable performance was confirmed. Also, direct positive and significant effect of CPI on sustainability performance is reported in this study. From the result analyzed, the significant and positive effect will also be increased in it is better explained by the practices of excellence such as personal commitment, innovation and customer focus.

The intervention of organizational excellence in explaining the effect of continuity in improvement that can result to sustainable performance has been practiced and evaluated positively in FBC through a strong focus on employees, customers and innovation.

The direct effect through a mediating variable between continuous process improvement and sustainable performance has been suggested by many past studies (Harms, 2013; Lau & Zhang, 2006; Vij & Bedi, 2012). CPI can affect innovation as the heart of the excellence and can in turn affect the sustainable performance (Arunachalam et al., 2013). The dimensions of CPI namely quality process, continuous product and services and feedback cannot be achieved except there is excellent practices such as personnel commitment, innovation and customer focus. The innovativeness among the managers and the employees is the willingness to innovate while innovation is just the practice to implement innovative concepts or ideas. Thus, innovativeness can be achieved by implementation of innovative ideas to gain excellent results and subsequently enhance the organization to achieve sustainable performance.

5.3.4.4 The Mediating Role of Organizational Excellence between Service Design and Sustainable Performance

As it can be seen in Chapter 4, under the Table 4.9 that at the 0.01 significant level, the mediating effect of organizational excellence between service design and sustainable

performance is supported (β = 0.123, t = 1.695, p < 0.01). Therefore, the proposed hypothesis H13 is supported.

As the result is revealed as expected, the findings of this study showed the significant mediating effect of organizational excellence in the relationship between service design and sustainable performance. The result is in consistency with past studies that confirmed the significant relationship effect of organizational excellence as a mediator on the relationship between service design and sustainable performance (Korry, 2013; Saeed, Yousafzai & Engelen, 2014; Todorovic & Ma, 2008). The result indicated that there is link between service design and sustainable performance that may generate positive result.

This result is explained from the contingency theory perspective. In FBC, there is clear vision that can direct the employees towards achieving the desires goals and objectives. The culture of service design in most of the companies varies from one department to another. Employees in processing department may have their own unique design compared to employees in packaging department. As a result of this, the development of innovation and synchronizing working environment is encouraged. In other words, regardless of the position and responsibility of any employees, they are empowered and delegated to take initiatives to improve their daily action on service design. In addition, there should be incentive program that will encourage workers at all organization's level to implement and take advantage to improve the services. In FBC, the present main objective is to be design-focused by providing security and safety to the employees, stakeholders and customers in order to increase their satisfaction. Therefore, there should be a cultural continuity that can fit the desired strategies. Lastly, more innovative design

should be enhanced and exploited by increasing incentives through human resources management policies.

5.3.4.5 The Mediating Role of Organizational Excellence between Human Resources Management and Sustainable Performance

From the past studies, Arunachalam et al. (2013) stated that human resources management can lead to innovation which is the heart of organizational excellence; this in turn impacts sustainable performance. Additionally, the FBC has effectively used and applied human resources management, in order to develop business excellence and accomplish best results. The results from this study show the significant and positive effect of the mediating effect of organizational excellence between HRM and sustainable performance ($\beta = 0.337$, $t = 4.455$, $p < 0.01$) at 0.01 significant level. Therefore, the hypothesis H4e is confirmed.

According to Chen et al. (2007), the characteristics of human resources management contribute to excellence performance. In addition, Dahlgaard-Park and Dahlgaard (2010) argued that the leaders of the organization should look for learning and creativity in employees and support the knowledge management to achieve the organizational sustainable and innovation excellence. The proper management of human resources by the leaders of FBC led them to be aware of the importance of excellence in accordance with the practicing of HRM. The activities of personnel behind HRM in an organization help to enhance the innovation which will satisfy the customers and all stakeholders; and ultimately maximize the performances of the organization. The result reflects the importance of human resources to enhance personnel commitment, customer focus and innovation among the companies under food and beverage industry.

5.3.4.6 The Mediating Role of Organizational Excellence between Quality Assurance and Sustainable Performance

The historical development of TQM from quality assurance showed that there have been three different developments along the line (Inoica & Baleanu, 2010). The main principles of quality assurance as a business practice is to enhance quality of output, reduce costs, increase productivity and satisfy the customers. In other word, quality assurance enhances organizations to achieve and gain business excellence (Lee, 2002). However, most practices of quality are in right direction but there are still shortages of realization on the important role of quality assurance in business excellence in order to achieve sustainable performance (Rashid & Aslam, 2012). Additionally, processes and explanation of spontaneous investigation for quality and excellence can be provided by TQM (Shukla, 2013). However, the result in this study shows that there is insignificant mediation of organizational excellence between quality assurance and sustainable performance (β = -0.047, t = 0.636, p> 0.1) as reported in Table 4.9 in Chapter 4. The result shows that, the hypothesis H4f is not supported as proposed earlier.

This effect of quality assurance on organizational excellence is not in accordance with other previous studies of Lee (2002) and Sharma and Kodali (2008). These studies showed that the effect of quality assurance in creating business excellence and sustainable performance lead to quality service, product and delivery, productivity and customer satisfaction (Hassan et al., 2007). According to Lu et al. (2011), there is still ongoing argument whether direction towards business excellence in practice and theory originated from quality assurance continuous development or not. Despite that the FBC realized the importance of quality assurance to lead to sustainable performance through the achievement of organizational excellence practices; the result does not portray the fact

that organizational excellence represents the proposed goal of implementing quality assurance which leads the organization to achieve sustainable performance.

5.3.4.7 The Mediating Role of Organizational Excellence between Information and Analysis and Sustainable Performance

The importance of information system and analysis among the employees during any implementation has been realized by the managers of FBC. The organization excellence as a mediator between information and analysis and sustainable performance is found to be insignificant ($\beta = -0.064$, $t = 0.774$, $p > 0.1$). The result is not in line with the previous study of Stratman and Roth (2002) that posits the effect of information and analysis on achieving optimum results. The study showed that information and analysis are required not only at the one stage of the production cycle of the industry but in all, including post-delivery stage.

According to Stratman and Roth (2002), information and analysis involves the ability to make use of the information and data within the organization and subsequently analyze it. To refine and support organizational excellence, the technical skills are required beyond pre-information and post-information phases. There are three stages in information and analysis: pre-assessment, implementation and analysis stages. Notably, IT skills are required by the employees in all these three stages to achieve the planned objectives from organizational excellence to enhance sustainable performance. The absence of information and analysis within the organization from the technicians, information analyst and managers can lead to poor and inefficient result which at the long run can affect the daily routines of the companies. However, the case is in contrary in food and beverages companies considering the outcomes of this study.

Summarily, the positive and insignificant result indicates the ability of the staff both database and user administrators in FBC to conduct system maintenance formal validation and system upgrade of all changes. Nevertheless, the managers showed that, they are aware about the role of information and analysis to achieve sustainable performance.

5.3.5 The Moderating Role of Environmental Regulation and Policy between TQM Elements and Sustainable performance (SP)

This study also investigated the moderating effect between TQM and sustainable performance in order to answer the questions raised and meet the objectives of this study from Table 4.10 in Chapter 4, the moderating effect of environmental regulation and policy between organizational excellence and sustainable performance is found to be insignificant (β = -0.012, t = 0.177, p> 0. 1). This result does not support the hypothesis H5 of the study. This study showed that the absence of ERP as practices does not affect the organizations to improve performance through implementation of TQM, then to organizational excellence on sustainable performance (Kaur, Singh & Ahuja, 2013). Therefore, ERP does not play the mechanism role that gives explanation on the effect of organizational excellence on sustainability performance.

Some studies previously confirmed the positive relationship between TQM and sustainable performance from one view, and ERP from other view. Therefore, the collective impacts of these variables on sustainable performance is logically proposed but not confirmed in this study. The result also does not reflect the importance of the regulation and policy as a mechanism that can explain the effect of TQM practices to improve sustainable performance through organizational excellence. Lastly, the result reflects lack of awareness of FBC in following regulations and policy in their daily work.

The insignificant moderating effect of envornmnetal regulation is supported by the study of Zhao, Jiang and Wang (2019) which reported that environmental regulation negatively moderates the relationship between knowledge spillover and the green economy. The result is in contrast with the study of Ambec, Cohen, Elgie and Lanoie (2013) that states that while empirically the hypothesis "environmental regulation leads to more innovation" is fairly well established, on the strong version "environmental regulation enhances business performance" is mixed with more studies with supportive results.

5.4 Conclusion

After the discussion on the relationship between the constructs of this study with the result analysis and findings subsequently, the following contributions of the research work carried out conclude the research undertaken.

5.4.1 Contribution of the Study

Many and ideas and insights on issues related to sustainable performance has been raised in this study on Malaysian FBC. The current study is one of the few researches carried out in Asian world to investigate the effect of TQM and ERP on sustainable performance under agro-allied sector with organizational excellence as mediator. Additionally, this study is an attempt to strengthen and expand the boundaries of the present existing knowledge in the literature by investigating the moderating effect of ERP on sustainability performance using PLS SEM as analysis technique. Therefore, by incorporating the effect of management leadership, human resources management, continuous process improvement, benchmarking, service design, information and analysis, quality assurance and environmental regulation and policy, this study has contributed both in practices and theory. Some contributions are elaborated in the following section.

5.4.1.1 Contribution to the Literature

This study undoubtedly increases the understanding of the connection existing between TQM elements as stated above, organizational excellence, ERP and sustainable performance. The framework of the research was developed from the past studies and it was employed to evaluate the hypotheses. In chapter 1, the significance of this study has been clearly discussed. So many contributions are discussed as follows:

Firstly, this study demonstrated the importance of TQM in agro-allied industries, particularly in the food and beverage companies. Additionally, it contributed theoretically to the TQM literature by reexamining the unresolved matters concerning the relationship between the TQM elements and sustainable performance. The inconsistencies in the previous studies on the effect of quality management practices on sustainable performance has called for further investigation and discussion. Therefore, this study significantly contributed to the existing literature by incorporating ERP and business excellence as the innovative strategies and practices to the theoretical model to explain better the construct variance of sustainable performance.

Second, this study reported the significance of BM, QA, CPI, SD and IA for enhancing the overall sustainable performance. Similarly, the direct effect of these TQM elements on sustainable performance was confirmed as they showed a positive impact on sustainability performance. The previous studies in the literature reported inconsistent results. Some of these results showed that the elements can enhance the performance positively, but other argued that they can affect the performance negatively and sometimes considered as the main reason for collapsing (Chervinski, 2014; Leshinsky, 2012; Marquita, 2010). Therefore, in this study the mediating effects of organizational excellence further

altered the relationships between the TQM elements and sustainable performance. The associations were examined with other strategic element under organizational excellence such as innovation, customer focus and personnel commitment to prove its significance level. The further intervention of organizational excellence confirmed the relationship between ML, CPI, SD, HRM and IA and sustainable performance while QA and BM reported no significant relationship with sustainable performance.

Third, the current study shows that, there is no significant effect of ML, HRM on sustainable performance but there is significant effect with the introduction of the mediating effect of organizational excellence. As a result of inconsistencies in the relationship, this study contributes to the existing literature on management by reinvestigating the effect of those factors on sustainable performance. There are many studies that examined the effect of ML and HRM on sustainable performance but there is still no agreement among the researchers. Therefore, many academics and researchers have questioned the suitability of ML and HRM strategies for sustainable performance as a result of inconclusive research outcomes (Wiklund & Shepherd, 2005). However, the study confirmed the significant and positive effect of ML and HRM on sustainable performance with the mediating intervention of organizational excellence.

Fourth, the result of the current study shows that, the joint effect on ML, BM, CP, SD, HRM, QA, and IA on the sustainable performance was stronger than the separate effect of each of these strategies alone. In addition to that, this study suggested that of ML, BM, CP, SD, HRM, IA and QA should be implemented and practiced as strategies. This can be traced to the interdependence among the dimensions of the constructs. Also, when comparing the measurement effect of ML, BM, CP, SD, QA, HRM and IA as composite

variables on sustainable performance, they are rarely recommended as practices and strategies.

Fifth, this study provided an important examination about the role played by organizational excellence in increasing the sustainability performance. Organizational excellence as a mediating mechanism that can explain the relationships more between ML, BM, CP, SD, HRM, QA, and IA and sustainable performance was examined. The mixed results revealed that, organizational excellence plays important roles in creating and enhancing sustainable performance. In addition, the significance of organizational excellence contributes to the contingency and institutional theory as excellence is one of the contingency factors that influence the selection of management practices and adding it as important resource in achieving organizational competitive advantage (Doty et al., 1993).

Sixth, most of the past studies focused on the public and service sectors. However, this study expands the existing literatures concerning TQM, ERP and organizational excellence in the manufacturing sector, taking the food and beverage companies as a case. In general, most of the studies in manufacturing sector were descriptive, conceptual and observational in nature. Therefore, this study on FBC in Malaysia has been an attempt to add to existing empirical literatures.

Finally, in addition to the tested hypotheses and the testing of the model, this study conducted a comprehensive analysis to validate the instrument. Majority of the past studies depended on the traditional way of instrument validation such as Cronbach alpha coefficient and factor analysis. These kind of instrument are not sufficient in the present

complex analysis. Specifically, PLS-SEM is used in the present study to validate the measures of the model and the hypothesized relationships. Thus, this study can be considered as one the very few thesis and studies that employed the approach of PLSSEM in analyzing the goodness of fit of measurement model and test of the hypothesized relationships.

5.4.1.2 Practical Contribution

The present study‘s results have significant contributions and implications for managers, practitioners, and policy makers. There are many advantageous insights on how TQM, organizational excellence and ERP can enhance the overall sustainable performance. Some of these practical contributions are the following:

First, the findings of this study suggested that BM, QA, CPI, SD and IA should be effectively incorporated in Malaysian food and beverage companies. In addition, the industry policy-makers should pay an attention to restructure the strategies, practices, and policies to be aligned with the technological advancements and implementing managerial strategies. The integration of strategies such as Process quality, company products and services, feedback system can help agro-allied industry as a whole to increase its performance and achieve the optimum competitive advantages.

Secondly, due to the inconsistent in the previous study about the effect of TQM on sustainable performance, organizational excellence and environmental regulation and policy intervened in this study to explain the practices in a better way. Although, the findings reported insignificant effect in the moderation of ERP, nevertheless, the results show the importance of organizational excellence as a practice to achieve in order to

increase and enhance sustainable performance. In addition, the results increase the awareness in food and beverage industry to follow rules and regulations of excellence models which involves life safety, innovation and customer focus when implementing TQM practices. Environmental regulation and policy as a practice on the other hand in food and beverage companies can also lead to higher performance at the same time with desire and a result from practicing other initiatives. Moreover, FBC should excel when dealing with other strategies and practices to have the successfulness and obtain the planned goals.

Finally, this study can also give some insights to public, manufacturing and service organizations in Malaysian and Asean region. For example, other industries in Malaysia or other Asian countries can take this study as a guideline when striving for excellence. In other words, FBC whether in Malaysia or outside can have many practical benefits from this study. The extensive literature and arguments, and the results should be taken into consideration from other industries to enhance their performance. In this study, the most important factors were discussed such as ML, BM, CP, SD, HRM, QA, IA, organizational excellence and ERP that are necessary nowadays for any organization that wants to achieve success and competitive advantages. However, ML, HRM and ERP are considered not important to have a direct relationship leading to sustainable performance except with the intervention of organizational excellence in the case of ML and HRM. In some companies, TQM practices were implemented but without having information system to link the whole departments, others have systems but not having strategies and practices such as QA and CPI. Therefore, the integration of these strategies and practices will help FBC to promote performance through various implementations as suggested by

the study's constructs concurrently. Additionally, private sectors can also have a great value from the findings of this study.

5.4.1.3 Contributions to Knowledge

First, the findings showed that awareness can be raised among the managers and decision-makers in Malaysian food and beverage companies on the significance of implementing certain TQM practices in their organizations. TQM as a management philosophy which comprises ML, BM, CP, SD, HRM, QA, and IA is considered as key factors for any organization that want to increase sustainability and achieve competitive advantage. In other words, if Malaysian food and beverage companies want to implement any strategies or initiate new system, TQM is needed in order to avoid problems that can be come out later.

In addition, ML, BM, CP, SD, HRM, QA, and IA as quality practices are an important integrated system. Thus, this study highlighted the importance of these elements for organizations to align with the competitive environment and achieve the advantages over competitors. As revealed from this study, effective production, human resources, information system and analysis, service design and delivery is very essential for any organization that has a willing to be global.

Also, as reported in the last chapter, the integration between these elements into an organization can lead the industry to achieve the desired objectives. The study supports the effect of quality process on sustainability performance such as environmental, economic and social to help FBC of Malaysia to have the advantages of implementing

high quality of process and to promote the awareness of employees about the importance of these systematic practices.

With the outcomes of the mediating impact of organizational excellence between TQM elements and sustainable performance as significant and supported, this shows the important role of regulatory laws. This result showed that, there should be more awareness among FBC managers and the importance of excellence models to enhance the entrepreneurial traits such as innovativeness and pro-activeness. Therefore, there is a need to increase this awareness about the essential role of business excellence.

The Figure 5.1 above and Figure 5.2 below therefore summarize the fact that: effective BM, CPI, SD, QA and IA as TQM elements have significant and positive effect on sustainable performance at one hand and the incorporation of organizational excellence as mediator into ML, CPI, SD, HRM and IA are very much significant to sustainable performance in other hand respectively.

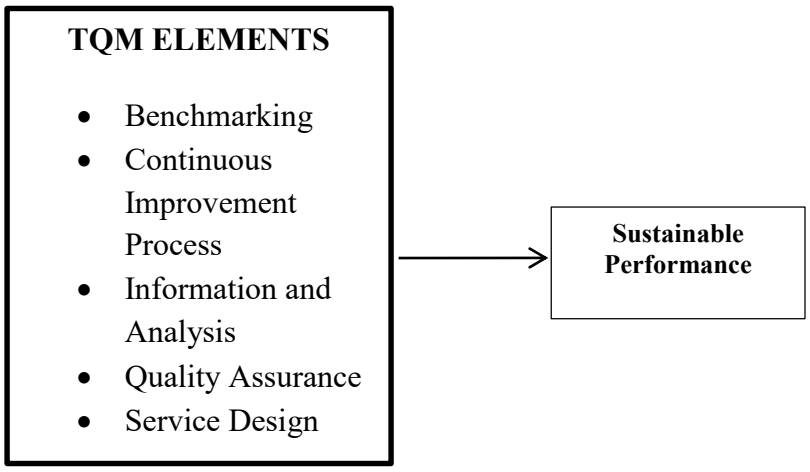

Figure 5.1
The Research Empirical Model linking Supported BM, CPI, SD, QA and IA relationships with Sustainable Performance

Therefore, managers should take into consideration the importance of this model when implementing any practice in the future.

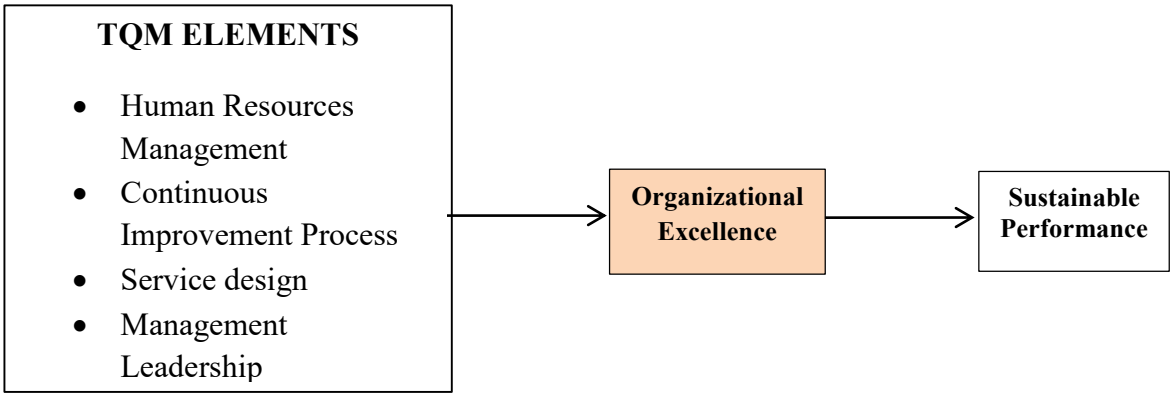

Figure 5.2:
The Research Empirical Model linking Supported ML, CPI, SD and HRM Relationships with Sustainable Performance while Mediating by Organizational Excellence

5.5 Limitation of the Study

There are still some shortcomings that are required to be given consideration when discussing the findings on this study despite the contributions and good insights provided in this study. .

First, the scope of the present study was limited to food and beverage companies only and not included other agro-allied companies in Malaysia. This limitation is pertained to the generalizability of the results of the study. Additionally, the unit of analysis in this study was any top personnel in the companies which could replace the role of managers. Although, the FBC is one of the main industries in Malaysia, generalizability of the results will be difficult on other sectors whether they are private or public organizations due to the technology advancement and leadership support.

Secondly, in the methodology part, a cross-sectional design was followed in this study to examine the hypothesized relationships at a single point of time which is considered as

another limitation. The change in the psychological human approaches and aspects to issues could change from one period to another. Due to this, there could be difference in the conclusion generated from this study if the research design was longitudinal. In other words, a review of TQM, organizational excellence and ERP showed that, they are long-term strategies in nature. Thus, considering the association between the variables at a point in time would not be justifiable enough to its reliability; therefore, it is recommended strongly that a longitudinal study should be carried out to evaluate the impact of TQM, organizational excellence and ERP on sustainable performance.

Third, being a quantitative research, the perceptions of the respondent are required to be translated into numbers using statements in the survey questionnaires through Likert scale. The biased perception of the situation can influence the answers (Macinati, 2008). This study therefore recommends future research to consider mixed method research approach. Future researches can employ both qualitative and quantitative research designs to complement each other.

Finally, another limitation is the lack of studies tackling the same factors in Malaysian with the best knowledge of the researcher. The lack of availability of these researchers, limit the research's results to be compared with other results of a study in the same context. In other words, in the context of Malaysia, there has been no researches previously that investigated the relationship between the constructs of the study; the researcher had to proceed in the study without having the advantages of other findings to be benchmarked or to be used as "compare and contrast" for more explanations.

5.6 Recommendations for Future Research

This study presents many opportunities for future researches. First, at a point in time the data of this study was collected only through cross-sectional method. A longitudinal approach can be considered due to the complexity in the joint effect of TQM, organizational excellence, and ERP on sustainable performance. The complexity in the relationships can be explained using an approach of longitudinal research over a long period of time. Also, for the sake of analyzing the changes in the relationship between the variable during the process over time, the longitudinal approach can be adopted.

Secondly, the research approach has a limitation on the researcher to observe perfectly the dynamic nature of the effects and relationships between the variables of the study in a long-term strategy. Therefore a case study approach can be considered to be investigate the dynamic effect of TQM elements on sustainable performance to get a better result. This alternative approach can influence researchers to examine in a deeper way on the complex relation between variables and the results can be consequently different and provide new perspective into the possible successful factors.

Third, the results of this study were based on the gathered data from a particular officer in FBC. However, they are the ones in the best positions to describe and answer the TQM, organizational excellence and ERP and their effect on sustainable performance. In some future studies, these constructs could be evaluated by other respondents such as customers and employees.

Fourth, the limitation of generalizability that has been discussed previously can be reduced by engaging in more researches about the impact of more TQM elements on

sustainability performance with organizational excellence as a mediator and existence of ERP. Some studies can be conducted separately to focus more on each construct. Additionally, the data collected from all manufacturing organizations in Malaysia Government can be used to examine the model of this study. Moreover, some other studies can be conducted in Malaysia by considering similar model but in different sector. Furthermore, this model can be empirically evaluated using data collected from neighboring countries in the same region with strong and unique cultural practices.

Finally, in chapter five, the R-square of sustainable performance is above 60%. This means that the model's variables contribute to 60% of sustainable performance. Based on this result, it can be safely conclude that there are some other variables that may increase the rate of performance which can be considered for future study.

In conclusion, the sustainability performance of a company through social, economic and environmental performance will continue to be the major issues related to the country's development. Thus, the attention of decision-makers and managers have caught the promotion of overall sustainable performance of an organization in developing country including Malaysia. From the past studies, the important roles of TQM, organizational excellence and ERP has been widely acknowledged as the most effective strategies to assist organization in enhancing competitive advantage over competitor and to improve their performance. These strategies have been recognized in Malaysia in general despite the short history of these practices and strategies in Malaysia.

In other view, the mixed findings from the supported and not supported relationships from the hypotheses shows that the effect of TQM through BM, CPI, SD, QA, ML, HRM, IA,

organizational excellence and ERP acknowledged the significant and important effect on sustainable performance. These strategies can still be helpful in developing countries to enhance sustainable performance of the agro-based industries of Malaysia in general and FBC in particular in spite of their origin from Western countries.

The mediating role of organizational excellence as a mechanism that explained the relationship between TQM elements and sustainable performance better is examined in this study. The result showed that the roles of TQM can be enhanced by organizational excellence in order to achieve higher sustainability. Following a model of excellence related to quality management practices play an important parts to enhance sustainable performance through policy implementation on innovative practices and strategies.

In summary, the results of this empirical study highlight new insights about how TQM elements, organizational excellence and ERP can improve the sustainable performance of food and beverage companies in Malaysia.

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Appendix A

SURVEY QUESTIONNAIRE

Sustainable Performance and Organizational Excellence of Malaysian Food and Beverage Companies: the Role of Total Quality Management and Environmental Regulation and Policy

This survey is to investigate the moderating effects of environmental regulation and policy (ERP) on the relationship between total quality management (TQM) and organizational excellence while desiring sustainable performance in the Malaysian Food and Beverage Companies. The TQM practices investigated by this study are: Management Leadership, Benchmarking, Continuous Process Improvement, Human Resources Management, Service Design, Quality assurance and Information and Analysis. Responses to the items posed in this inquiry are graded by a five-point interval scale. We humbly request for your sincere and objective responses. Your responses are promised to be treated with confidentiality and shall be exclusively used for the purpose of this research.

This questionnaire comprises two sections. The first section asks with questions about the respondent's demographic details, and the second section contains four parts. The first part highlights items measuring sustainable performance. The part two, three and four contain items measuring total quality management, organizational excellence and environmental regulation and policy respectively.
Thank you for your assistance.

For further inquiry, you can contact my research supervisor with the following contact:

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Section I: Demographic Details

1. Your Job Position

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2. Gender

Male ☐

Female ☐

3.Age

Between 18 and 34 ☐

Between 35 and 44 ☐

Between 45 and 60 ☐

60 and above ☐

4. Years of Experiences:

i. ( ) Below 3 years ii. ( ) 4-6 years

iii. ( ) 7-9 years iv. ( ) Above 10 years

5. Qualifications

Postgraduate Degree ☐ First Degree ☐

Secondary School Certificate ☐

Primary School Certificate ☐

No Certification Held ☐

Section II: On the following scale, please indicate the appropriate number which best reflect your perception

(1) Strongly disagree SD	**(2) Disagree D**	**(3) Neutral N**	**(4) Agree A**	**(5) Strongly Agree SA**

Part I: Sustainable Performance

Please indicate your response to the following statements according to the scale above.

	During the last three years, our organization has achieved…	SD 1	D 2	N 3	A 4	SA 5

SP01	Decrease in cost of material purchasing					
SP02	Decrease in cost of energy consumption					
SP03	Reduction in emission of air caused by the activities of the manufacturing company					
SP04	Reduction in water wastage from the company's activities					
SP05	Improvement of employees' health and safety resulting from green practices					
SP06	Engagement and incentive for local employment					

Part II: Total Quality Management

	Quality Practices	SD 1	D 2	N 3	A 4	SA 5
Management Leadership						
ML1	Senior management encourages changes actively and implements a culture of commitment, trust and involvement in moving towards best practices					
ML2	Idea from team members are implemented actively in assisting management					
ML3	Quality goals are clearly identified for employees to achieve					
ML4	Members of the company are rewarded consistently for quality improvement and good suggestion					
ML5	Quality is viewed by the senior management as more important than schedule and cost objectives					
Human Resource Management						
HRM1	Our organization has effective bottom-up and top-down process of communication					
HRM2	Our organization provides training in quality principals such as data analysis, team building, statistical techniques and problem solving					
HRM3	Employees' suggestion are evaluated regularly and formally					
HRM4	Our line workers are given necessary resources to make corrections to quality problems and inspect their own work					
Quality Assurance						
QA1	Our quality department is effective in training and solving quality problems					
QA2	Regulatory and legal requirement and risk factors are integral parts of performance improvement and management of our operations, products and services					

QA3	Our organizations focuses on best practice achievement					
QA4	There is continuous coordination between quality department and other departments					
QA5	Quality of new service or product is viewed as more important than reducing its cost					
QA6	The process of production is designed in a way that it adds value to our products					
Service Design						
SD1	Before marketing, new service design are reviewed thoroughly					
SD2	Quality of new service is more considered than cost reduction					
SD3	In the design team, there are employees from other functional departments					
SD4	In a design of new services to the market, employees who are not in the design team are also involved to a great extent					
SD5	Newly introduced service design processes are critically examined prior to its actual implementation					
Information and Analysis						
IA1	Our organization has formal guidelines to ensure improvement, reliability and consistency of quality data gathering cycle					
IA2	Our organization measure often the process and product quality					
IA3	On quality improvement, our decisions are always based on objective data					
IA4	Employee satisfaction is regularly and formally measured					
Benchmarking						
BM1	In our organization, it is emphasized always that benchmarking is our strategy to achieve a better competitive positions					
BM2	We pay visit to other companies, internationally or locally to examine their practices					
BM3	In our company, we conduct research to find out the best practices of other international and local policies.					
BM4	Our organization have a way of identifying a benchmarking subject					
BM5	Our organization has a collective way of identifying partners					
BM6	Our organization determines current competitive gap among other companies					

BM7	Our organization identifies the critical success factors or indicators to be benchmarked					
BM8	Our organization projects future performance					
BM9	Our organization develops action plans after comparison					
Continuous Process Improvement						
CPI1	In our company, there is always an emphasis in all activities at various levels on the continuous improvement					
CPI2	In our company, continuous improvement is emphasized to the employees in the training programs provided					
CPI3	In the policies of our company, improving the quality is more important than the quantity or short-term goals					
CPI4	In our company, all stations and development believe that, they can serve better and survive in a highly competitive environment by implementing continuous improvement.					

Part III: Organizational Excellence

	Organizational Excellence	SD 1	D 2	N 3	A 4	SA 5
OE1	Customer caring is the top priority of the company					
OE2	Our company develops services with customers in mind					
OE3	Our employees are very committed to our company					
OE4	Our employees are the most valuable asset of the company					

Part IV: Environmental Regulation and Policy

	Environmental regulation and policy	SD 1	D 2	N 3	A 4	SA 5
ERP01	Our organization has coordination between technical and legal authorities in framing and respecting environmental issues.					
ERP02	Our organization establishes free environment for all the customers					
ERP03	Our organization enforces constitutional law relating to environmental obligation					

ERP04	Our organization keeps human habitation free from pollution					
ERP05	Our organization establish environmental balance for keeping nature and natural beauties					
ERP06	Our organization has enforcement of human right to pollution-free environment under constitutional obligation for its employees					

Comments

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THANK YOU

Appendix B

Latent Variable Correlations

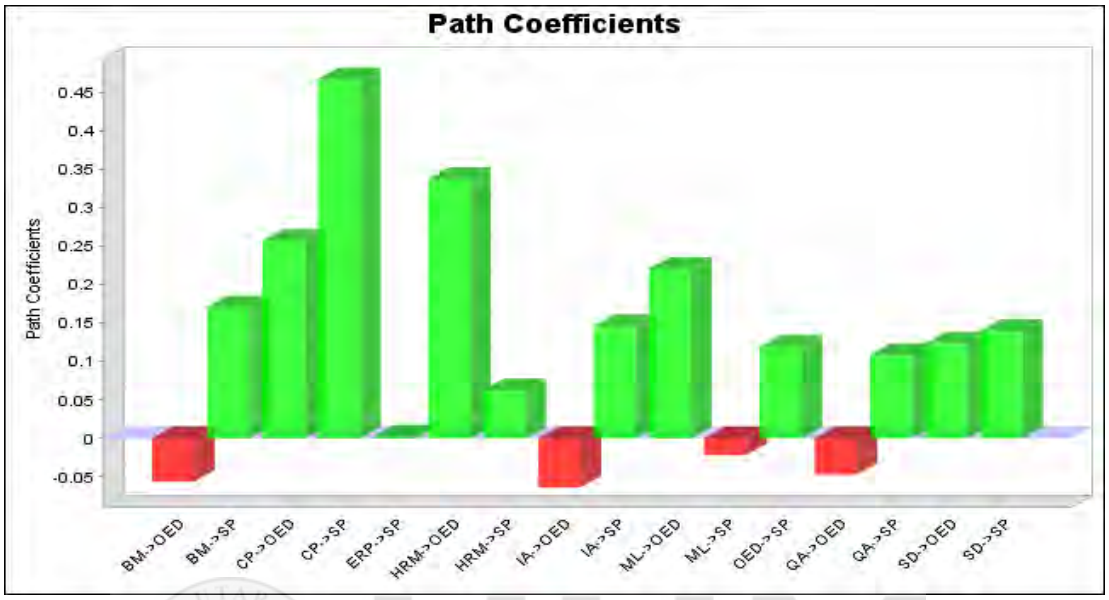
	BM	CP	ERP	HRM	IA	ML	OED	QA	SD	SP
BM	1.000	0.602	0.219	0.457	-0.053	0.104	0.314	0.313	0.410	0.600
CP	0.602	1.000	0.207	0.487	0.103	0.038	0.415	0.321	0.331	0.745
ERP	0.219	0.207	1.000	0.120	0.055	0.187	0.037	0.071	0.154	0.182
HRM	0.457	0.487	0.120	1.000	-0.002	0.102	0.494	0.349	0.414	0.520
IA	-0.053	0.103	0.055	-0.002	1.000	-0.078	-0.061	-0.110	-0.113	0.152
ML	0.104	0.038	0.187	0.102	-0.078	1.000	0.268	0.005	0.035	0.046
OED	0.314	0.415	0.037	0.494	-0.061	0.268	1.000	0.190	0.322	0.448
QA	0.313	0.321	0.071	0.349	-0.110	0.005	0.190	1.000	0.381	0.393
SD	0.410	0.331	0.154	0.414	-0.113	0.035	0.322	0.381	1.000	0.453
SP	0.600	0.745	0.182	0.520	0.152	0.046	0.448	0.393	0.453	1.000

Latent Variable Covariance

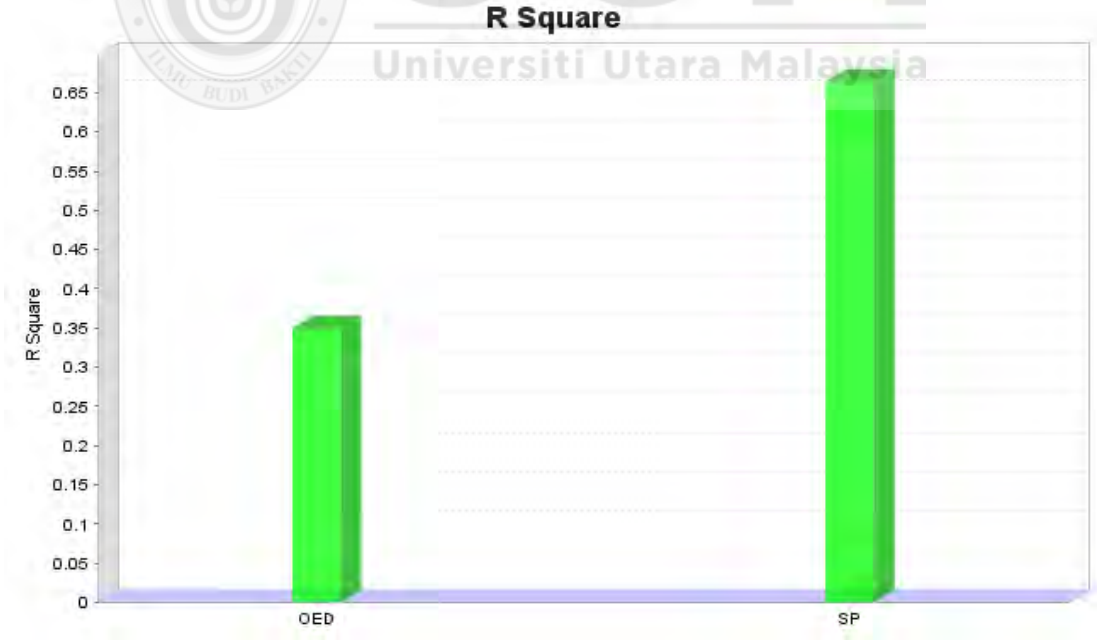
	BM	CP	ERP	HRM	IA	ML	OED	QA	SD	SP
BM	1.000	0.602	0.219	0.457	-0.053	0.104	0.314	0.313	0.410	0.600
CP	0.602	1.000	0.207	0.487	0.103	0.038	0.415	0.321	0.331	0.745
ERP	0.219	0.207	1.000	0.120	0.055	0.187	0.037	0.071	0.154	0.182
HRM	0.457	0.487	0.120	1.000	-0.002	0.102	0.494	0.349	0.414	0.520
IA	-0.053	0.103	0.055	-0.002	1.000	-0.078	-0.061	-0.110	-0.113	0.152
ML	0.104	0.038	0.187	0.102	-0.078	1.000	0.268	0.005	0.035	0.046
OED	0.314	0.415	0.037	0.494	-0.061	0.268	1.000	0.190	0.322	0.448
QA	0.313	0.321	0.071	0.349	-0.110	0.005	0.190	1.000	0.381	0.393
SD	0.410	0.331	0.154	0.414	-0.113	0.035	0.322	0.381	1.000	0.453
SP	0.600	0.745	0.182	0.520	0.152	0.046	0.448	0.393	0.453	1.000

Appendix C

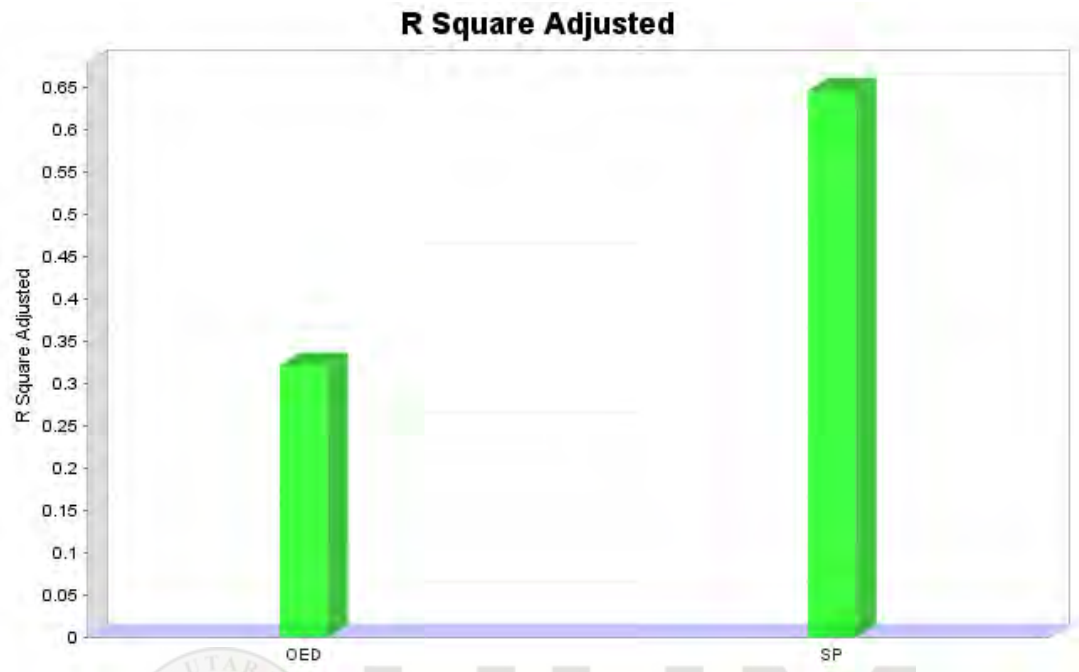
Path Coefficient



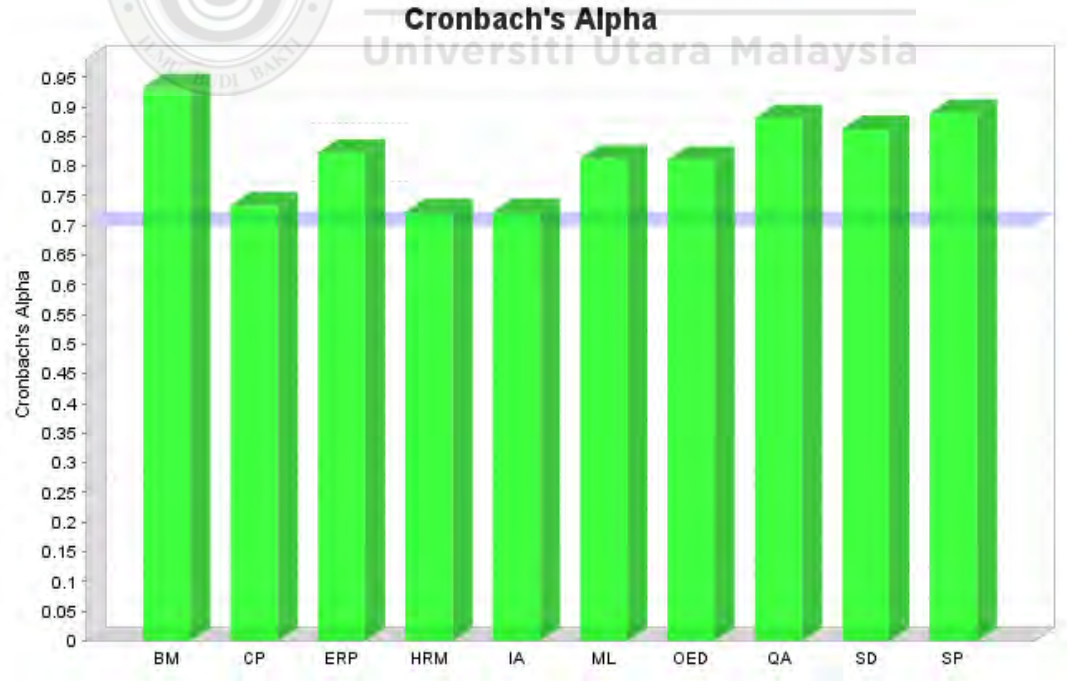
R-square



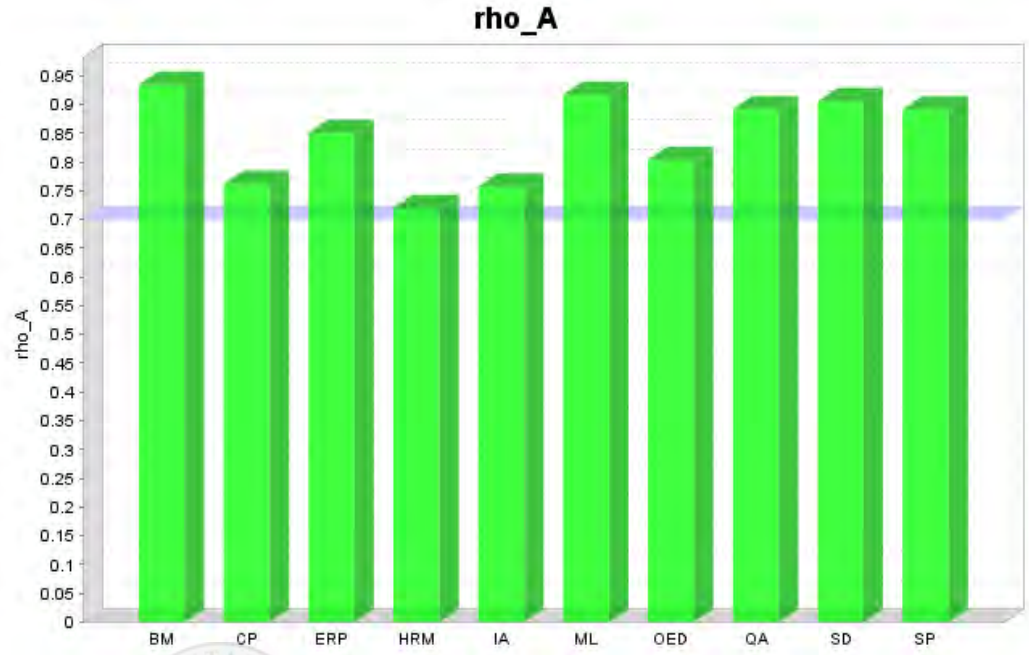
R-Square Adjusted



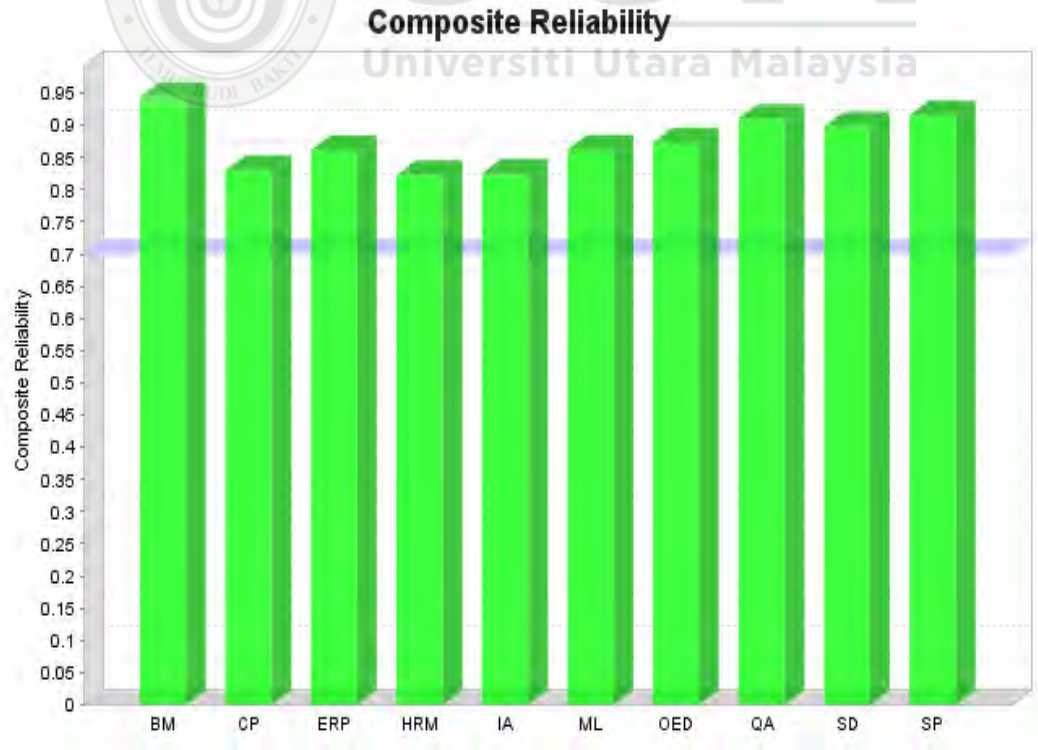
Cronbach's Alpha



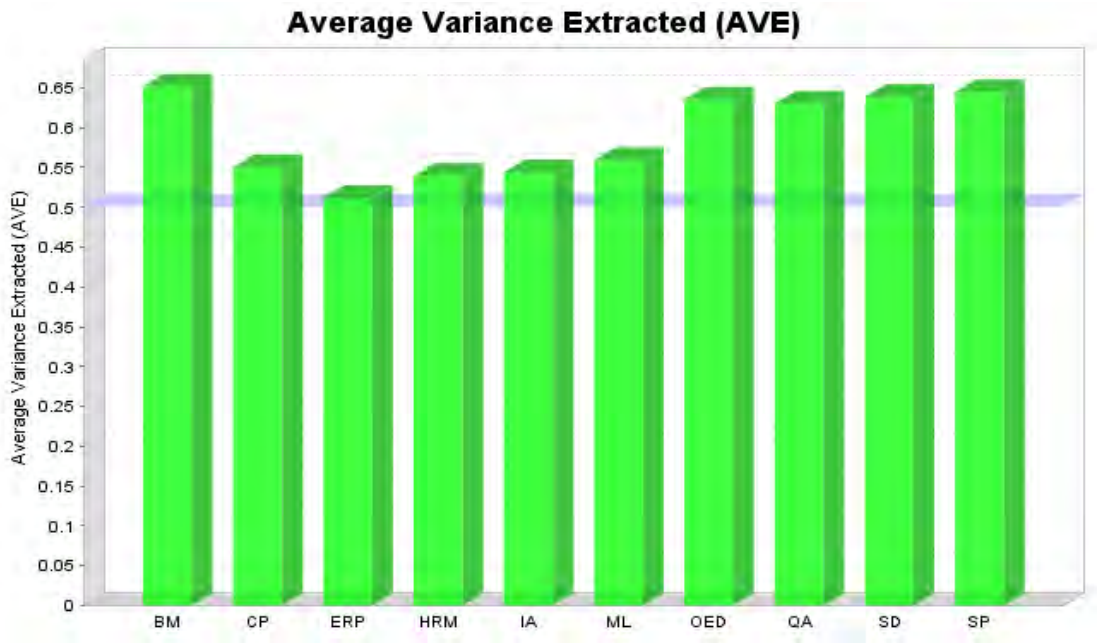
Rho_A



Composite Reliability



Average Variance Extracted



Heterotrait-Monotrait Ratio (HTMT)